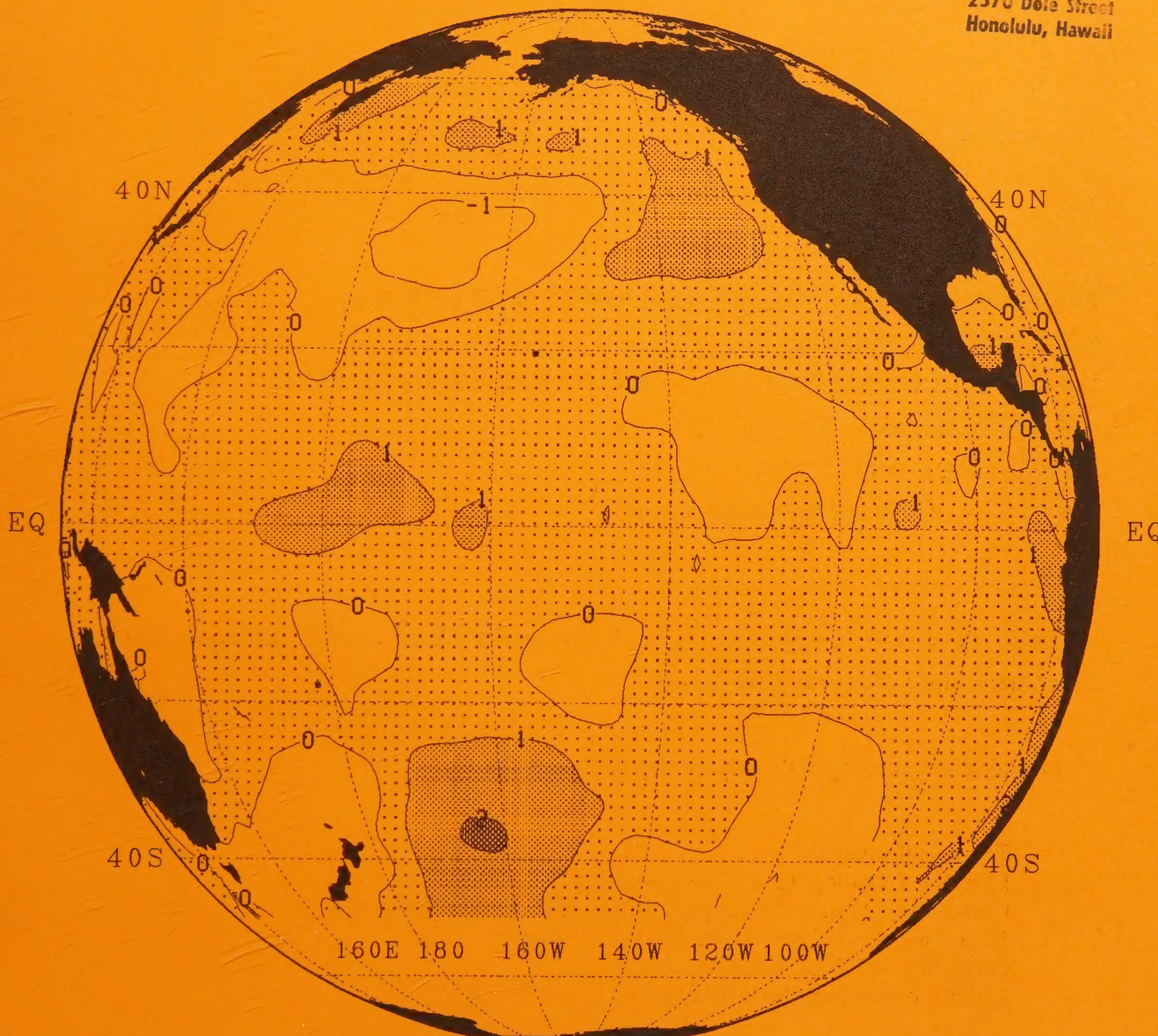
# 気象庁海洋月報

## Monthly Ocean Report

## April 1997 (No. 52)






Climate and Marine Department
Japan Meteorological Agency

気象庁 気候・海洋気象部

平成9年4月

気象庁海洋月報は、気象庁 気候·海洋気象部 海洋課で作成されています。

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Monthly Ocean Report is prepared by the Oceanographical Division, Climate and Marine Department, Japan Meteorological Agency.

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表紙は、1997年4月の太平洋の月平均海面水温偏差図です。
陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for April 1997 in the Pacific Ocean.
Areas of positive anomalies are shaded.

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# 海況の特徴（１９９７年４月）

## 日本近海の海況

海面水温は本州東方で平年より1℃低かった。一方、常磐沖では平年より1℃高く、日本海、東シナ海西部、本州南方で平年より0.5℃以上高かった（第４図）。

2月に九州南東で発生し3月に四国沖に東進した黒潮の小蛇行は4月上旬には姿を消し、黒潮は九州、四国に沿って流れていた。関東近海の黒潮は4月上旬、中旬には32.5゜N付近まで南に蛇行する流路をとっていたが、下旬には蛇行部は伊豆諸島の東に移動した（第9図）。

本州東方の親潮系の冷水は38゜N, 143゜Eまで達していた（第5図）。

## 太平洋の海況

太平洋熱帯域の海面水温は、160゜Eから150゜Wにかけてと110゜W以東で平年より0.5℃以上高く、日付変更線付近と南米沿岸では+1℃以上の正偏差も見られた。

北太平洋中緯度の30～40゜N、150゜W以西の海面水温の負偏差は強まり、日付変更線から160゜Wにかけて-1℃以下の負偏差が見られた。30゜N以北の北米西岸及び50゜N付近の海面水温は平年より0.5℃以上高かった（第16図）。

# Highlights April 1997

## Seas adjacent to Japan

SSTs were 1°C below normal east of Honshu. Positive SST anomalies of +1°C were found off Joban. SSTs were more than 0.5°C above normal in the Japan Sea, western part of the East China Sea and south of Honshu (Fig. 4).

The Kuroshio small meander which occurred southeast of Kyushu in February and moved eastward in March disappeared early April. The Kuroshio took an offshore path off Tokai and Kanto in the first and second 10 days of April. The southward crest of the path reached 32.5°N around Izu Islands. The crest moved into the east of Izu Islands in the last 10 days (Fig. 9).

The Oyashio cold water extended southward to 38°N, 143°E (Fig. 5).

## Pacific

In the equatorial Pacific, positive SST anomalies more than 0.5°C were observed from 160°E to 150°W and east of 110°W. In particular, SSTs were more than 1°C above normal around the date line and off South American coast.

Negative SST anomalies increased in magnitude in the middle latitude of the North Pacific between 30°N and 40°N west of 150°W, with the anomalies less than -1°C between the date line and 160°W. SSTs were more than 0.5°C above normal north of 30°N west of North America and around 50°N (Fig. 16).

# 海洋気象観測船による日本近海における海洋観測

Oceanographical observations in the seas adjacent to Japan
by four research vessels of the Marine Observatories

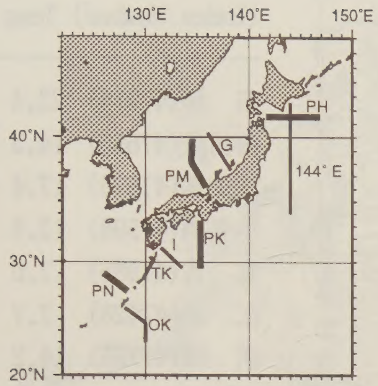



**図 A**. 海洋気象台の観測船による定期海洋観測定線

**Fig. A**. Routine oceanographic observation lines in the seas adjacent to Japan.

函館・神戸・長崎・舞鶴の各海洋気象台では、それぞれ高風丸・春風丸・長風丸・清風丸によって、日本近海に定期観測定線 (図 A) を定め、年に 4 回以上の海洋観測を行っている。これらの定線観測は気候変動および海洋環境の監視、海況変動の実態の把握等を目的としている。

各観測船では、海面から深層までの水温、塩分、溶在酸素等、海潮流、重金属・油分等の海洋汚染物質等の海洋観測を行っている。

Hakodate, Kobe, Nagasaki and Maizuru Marine Observatories perform routine oceanographic observations along fixed lines in the seas adjacent to Japan four times or more in a year by the research vessels *Kofu Maru*, *Shumpu Maru*, *Chofu Maru* and *Seifu Maru*, respectively. The oceanographic observations are conducted in order to watch oceanographic and environment condition, to monitor the background levels of marine pollutants, and to make better understanding of mesoscale oceanographic phenomena such as variation in the path of the Kuroshio.

The vessels observe the following properties: water temperature, salinity, dissolved oxygen, and so on from the sea surface to the deep ocean, ocean currents and marine pollutants.

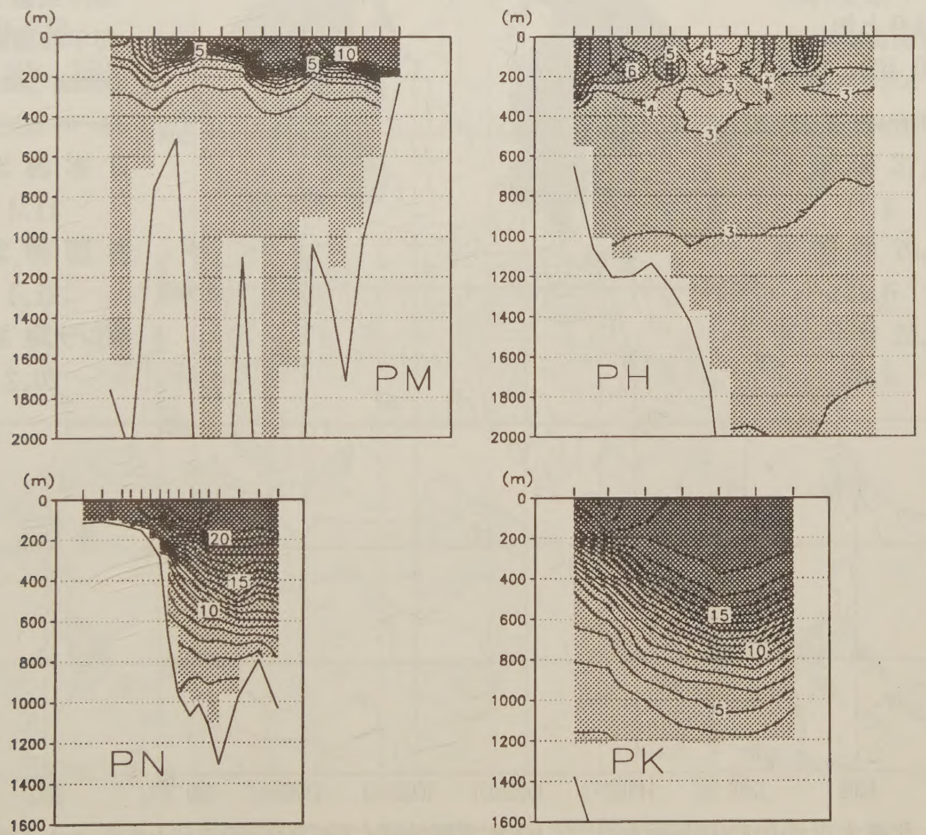
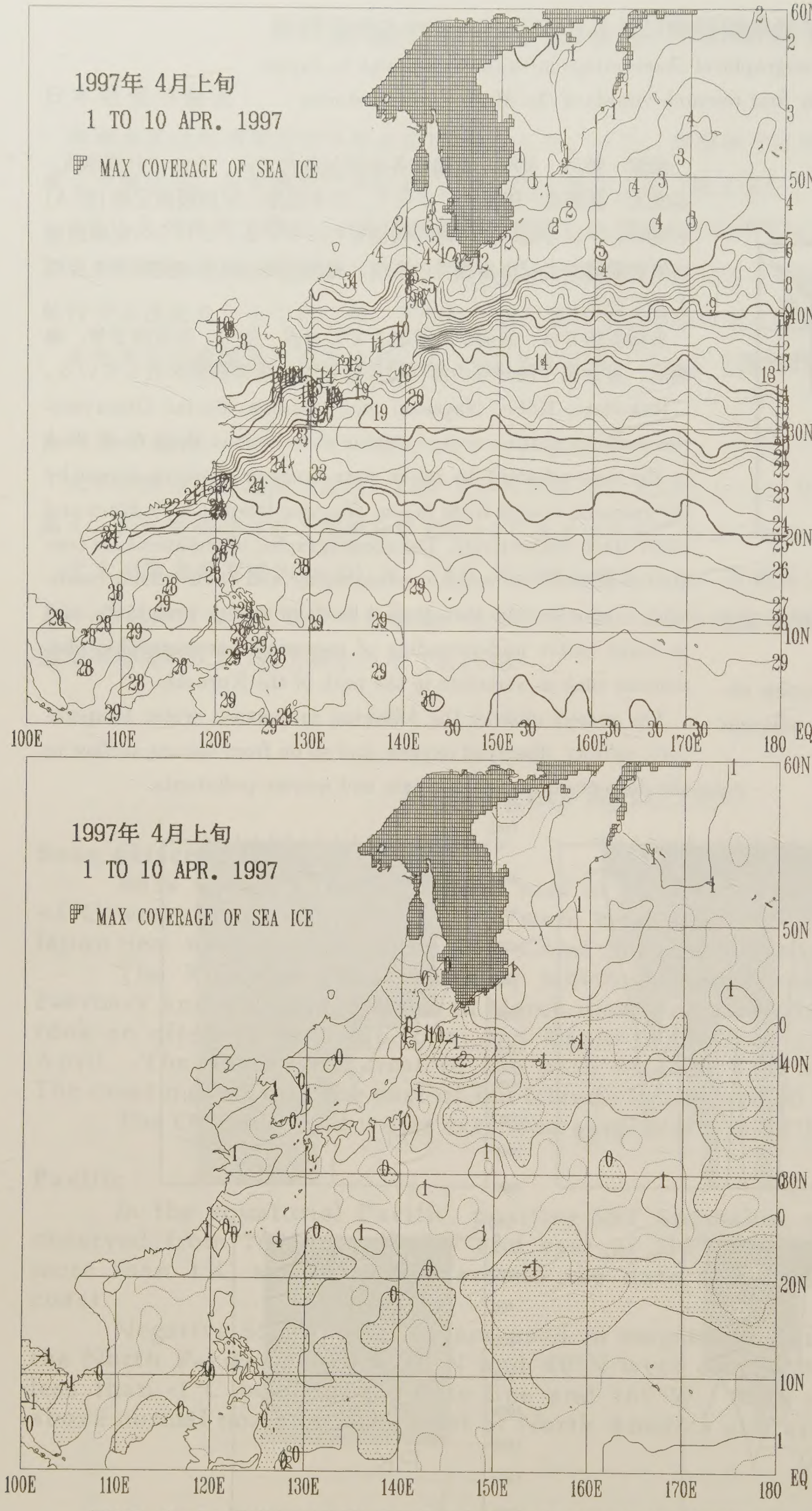



**図 B**. PM(左上:清風丸)、PH(右上:高風丸)、PN(左下:長風丸)、PK(右下:春風丸) の各定線の 1997 年 1～3 月における水温の鉛直断面図 (°C, 等値線間隔は 1°C, 図の右側が観測定線の南/東側にあたる)

**Fig. B**. Vertical sections of water temperature (°C) in winter 1997. Observations along PM, PH, PN, and PK lines are performed by *Seifu Maru*, *Kofu Maru*, *Chofu Maru*, and *Shumpu Maru*, respectively. Right side of the figure corresponds to South/East side of the section.




旬平均沿岸水温(℃)
Coastal Water Temperature

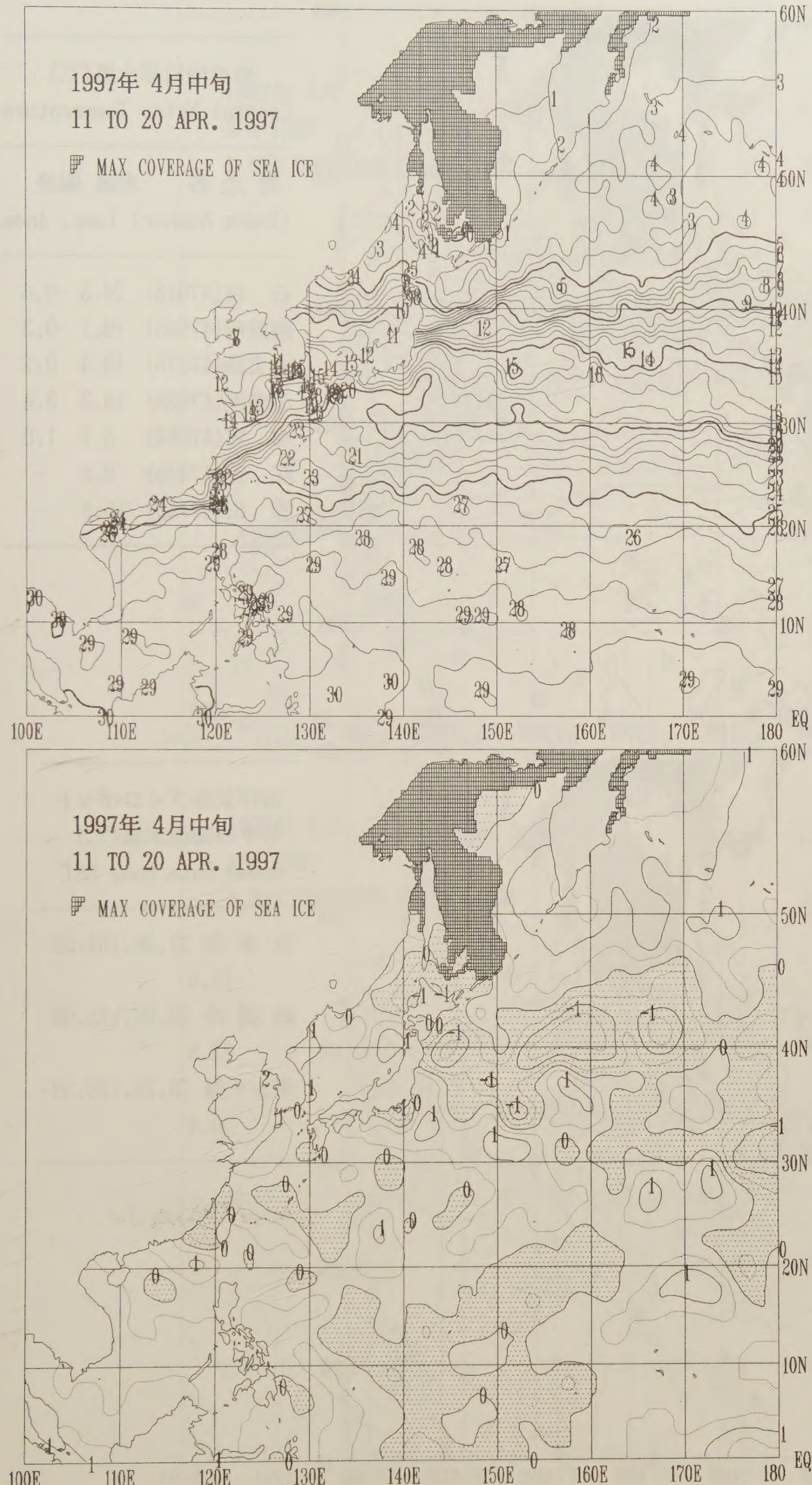
| 地点名 (Index Number) | 水温 Temp. | 偏差 Anom. |
|---|---|---|
| 石　垣(47918) | 23.4 | 0.3 |
| 御前崎(47655) | 14.3 | 0.1 |
| 八丈島(47678) | 17.4 | -0.7 |
| 小名浜(47598) | 12.4 | 2.9 |
| 宮　古(47585) | 7.6 | 1.5 |
| 江　差(47428) | 7.7 | - |
| 浜　田(47755) | 14.2 | - |

海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

| | | |
|---|---|---|
| 日本海 | 37.9N,134.5E | 11.1 |
| 四国沖 | 29.0N,135.0E | 21.1 |
| 東シナ海 | 28.2N,126.3E | 20.2 |

第1図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1997年 4月上旬)

Fig.1 Ten-day mean SSTs in the western North Pacific (top) and anomalies (bottom) for the 1st ten-day period in APR 1997. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown as broken lines. Negative anomalies are spotted.



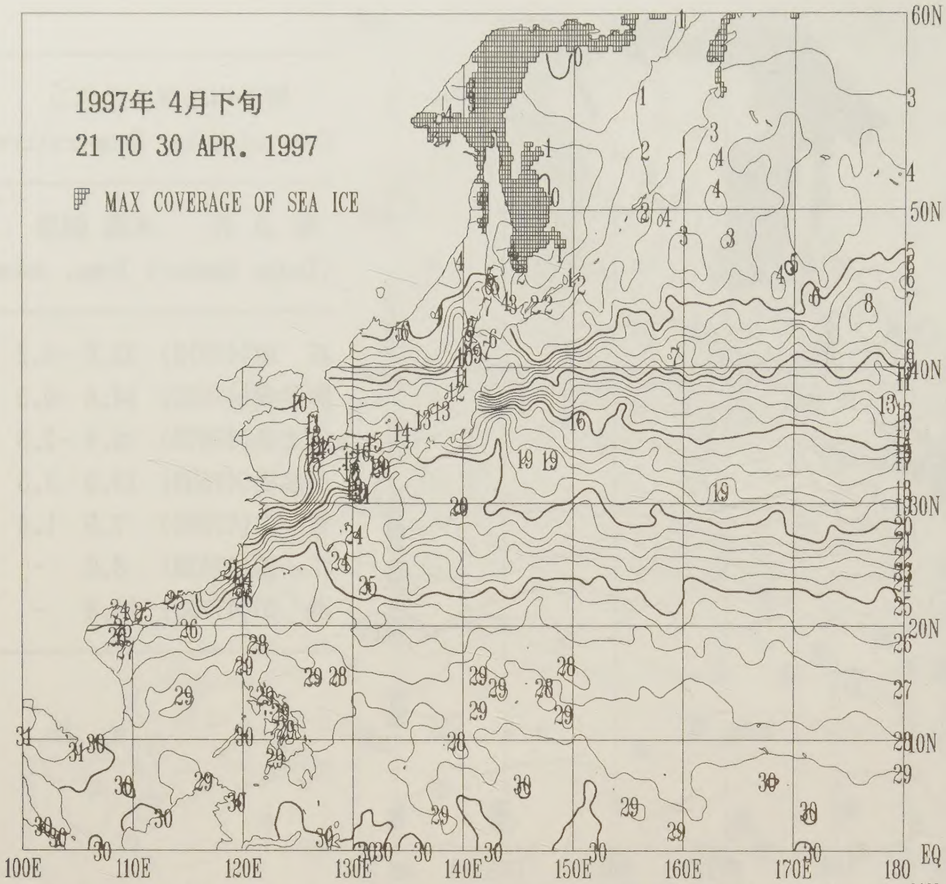

| 旬平均沿岸水温(℃)<br>Coastal Water Temperature | | |
|---|---|---|
| 地点名<br>(Index Number) | 水温<br>Temp. | 偏差<br>Anom. |
| 石　垣(47918) | 23.6 | -0.2 |
| 御前崎(47655) | 14.8 | -0.5 |
| 八丈島(47678) | 16.4 | -2.5 |
| 小名浜(47598) | 13.9 | 3.5 |
| 宮　古(47585) | 7.9 | 1.4 |
| 江　差(47428) | 8.6 | - |
| 浜　田(47755) | 14.8 | - |

海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

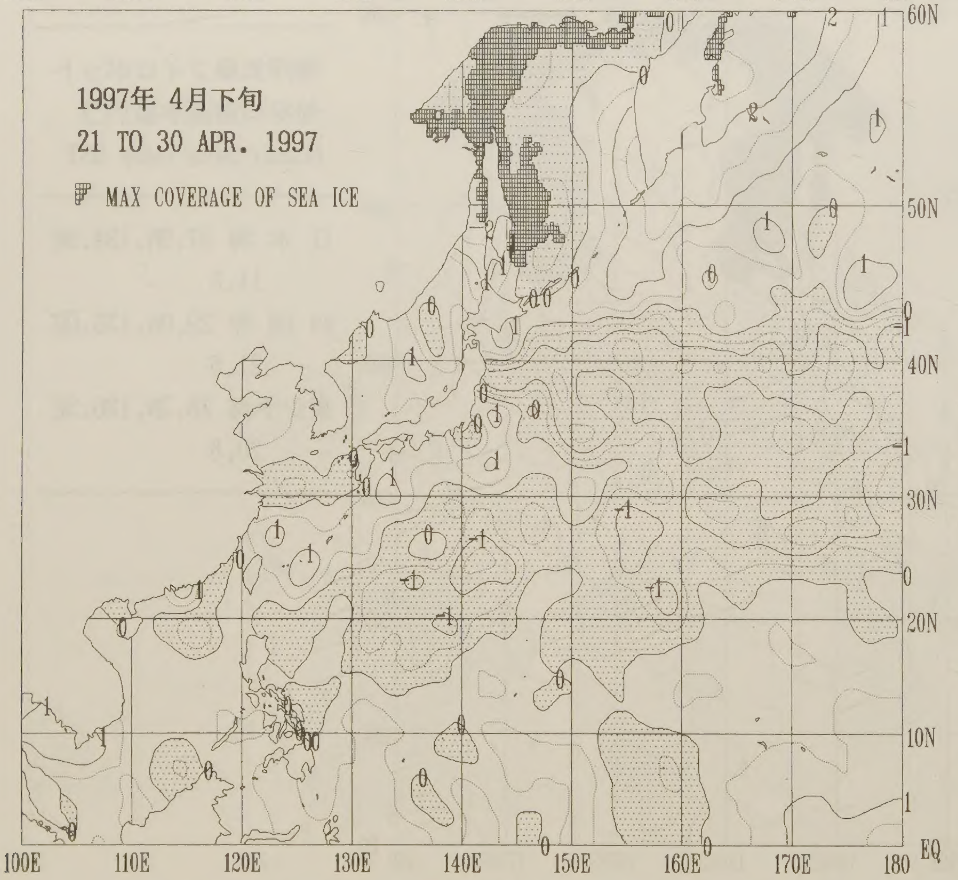
| | |
|---|---|
| 日 本 海 37.9N,134.5E | 11.5 |
| 四 国 沖 29.0N,135.0E | 21.6 |
| 東シナ海 28.2N,126.3E | 20.8 |

第2図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1997年 4月中旬)

Fig.2 Ten-day mean SSTs in the western North Pacific (top) and anomalies (bottom) for the 2nd ten-day period in APR 1997. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown as broken lines. Negative anomalies are spotted.




| 旬平均沿岸水温(℃)<br>Coastal Water Temperature | | |
|---|---|---|
| 地 点 名<br>(Index Number) | 水温<br>Temp. | 偏差<br>Anom. |
| 石　垣(47918) | 24.3 | -0.4 |
| 御前崎(47655) | 16.1 | -0.3 |
| 八丈島(47678) | 19.4 | 0.2 |
| 小名浜(47598) | 14.3 | 3.4 |
| 宮　古(47585) | 8.1 | 1.0 |
| 江　差(47428) | 9.5 | - |
| 浜　田(47755) | 15.8 | - |

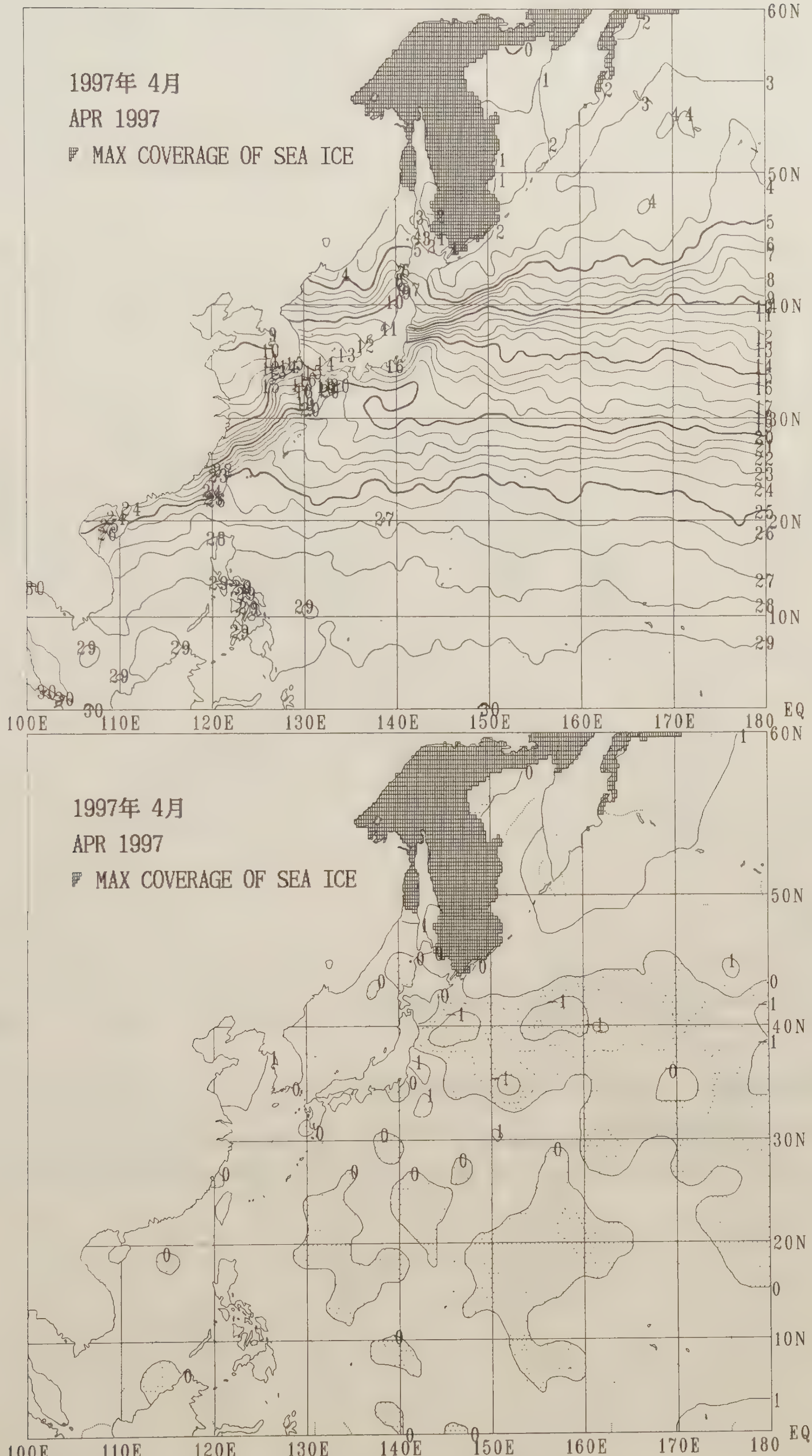



海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

| | |
|---|---|
| 日 本 海 | 37.9N,134.5E |
| | 12.6 |
| 四 国 沖 | 29.0N,135.0E |
| | 22.5 |
| 東シナ海 | 28.2N,126.3E |
| | 20.4 |

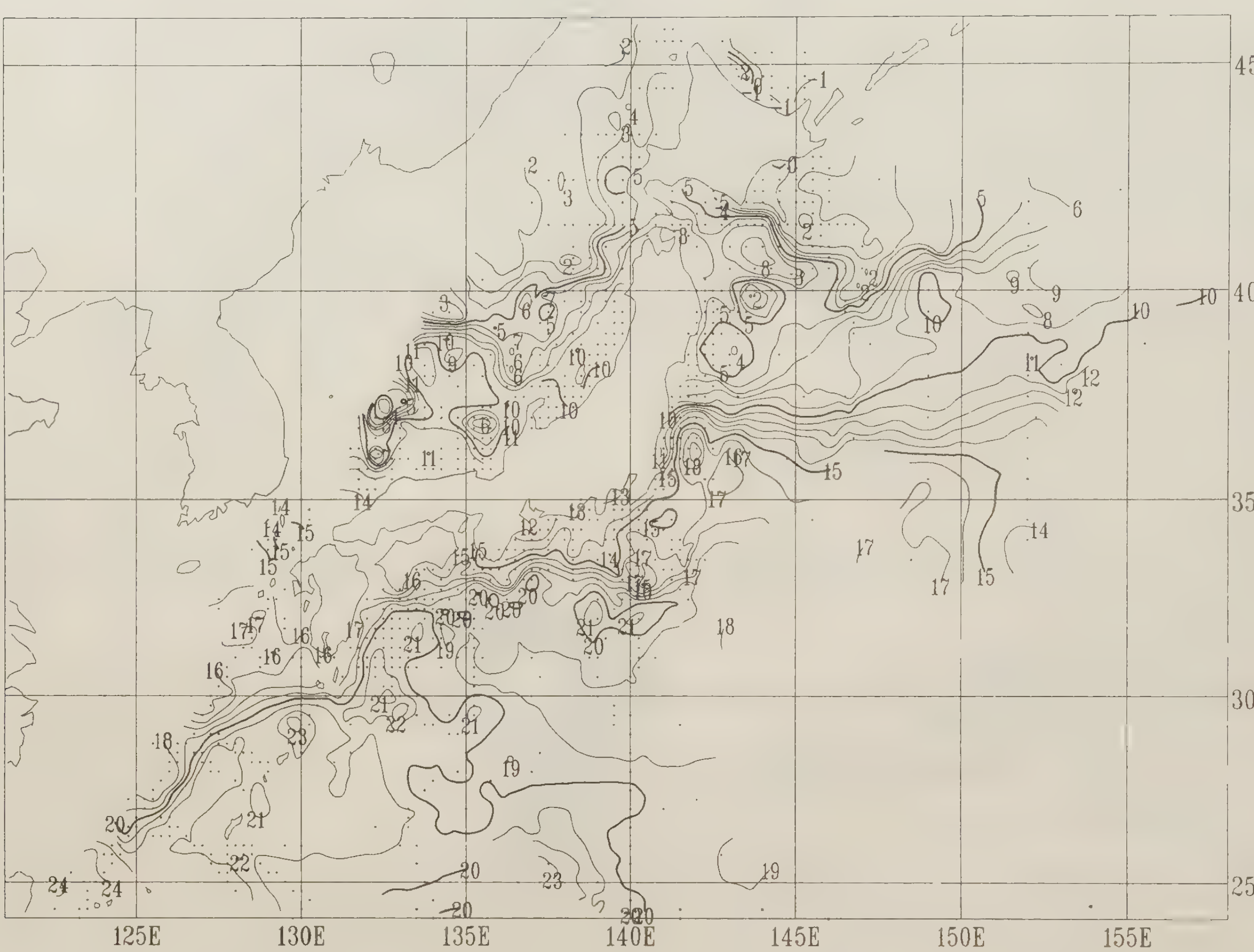
第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1997年 4月下旬)

Fig.3 Ten-day mean SSTs in the western North Pacific (top) and anomalies (bottom) for the 3rd ten-day period in APR 1997. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown as broken lines. Negative anomalies are spotted.




第4図 北西太平洋月平均海面水温図(上)及び偏差図(下)(1997年 4月)

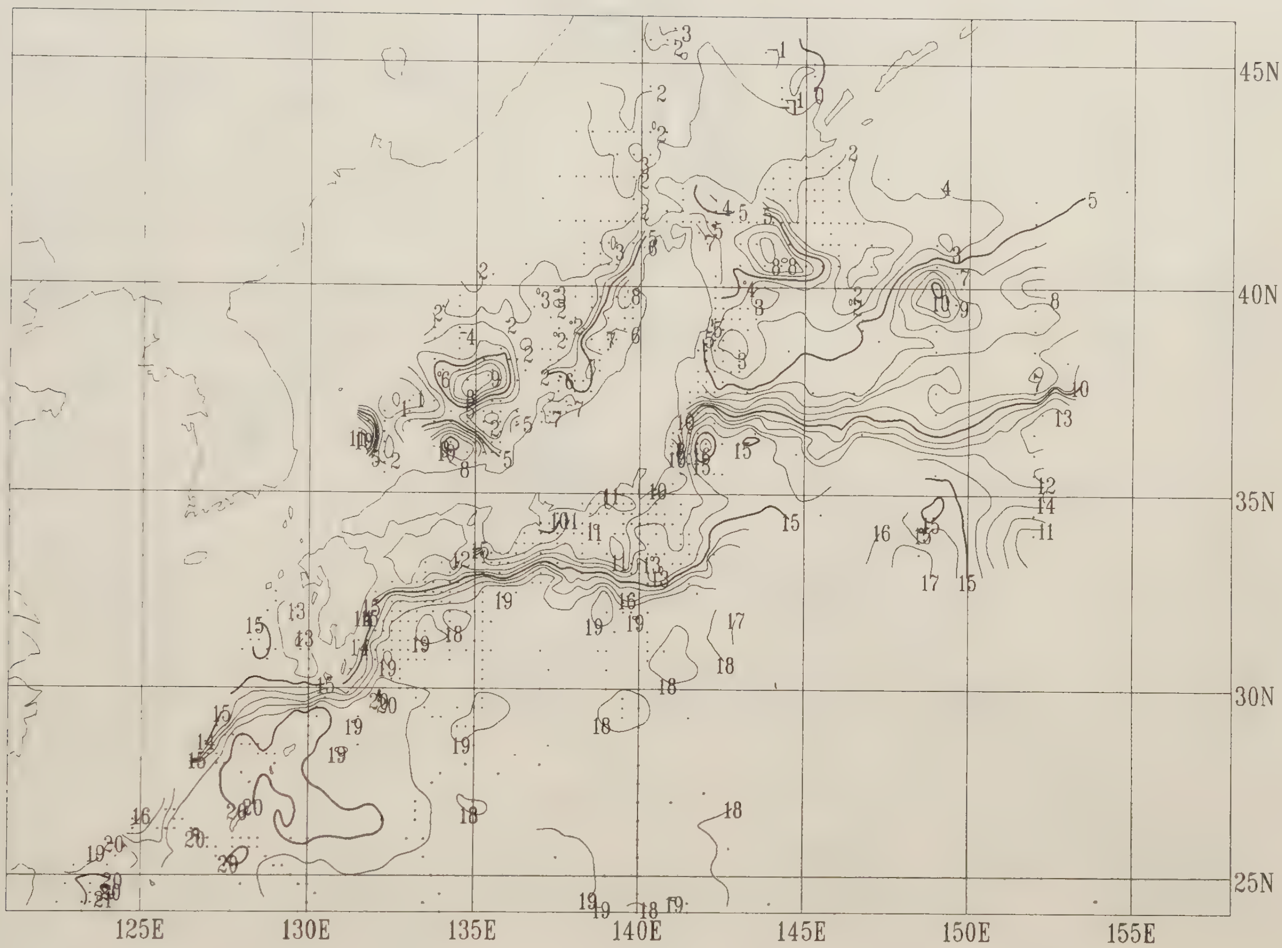
Fig.4 Monthly mean SSTs in the western North Pacific (top) and anomalies (bottom) for APR 1997. Anomalies are computed from the JMA climatology (1961-1990). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown as broken lines. Negative anomalies are spotted.




第5図　日本近海表層水温(深さ100m)図 (1997年 4月)

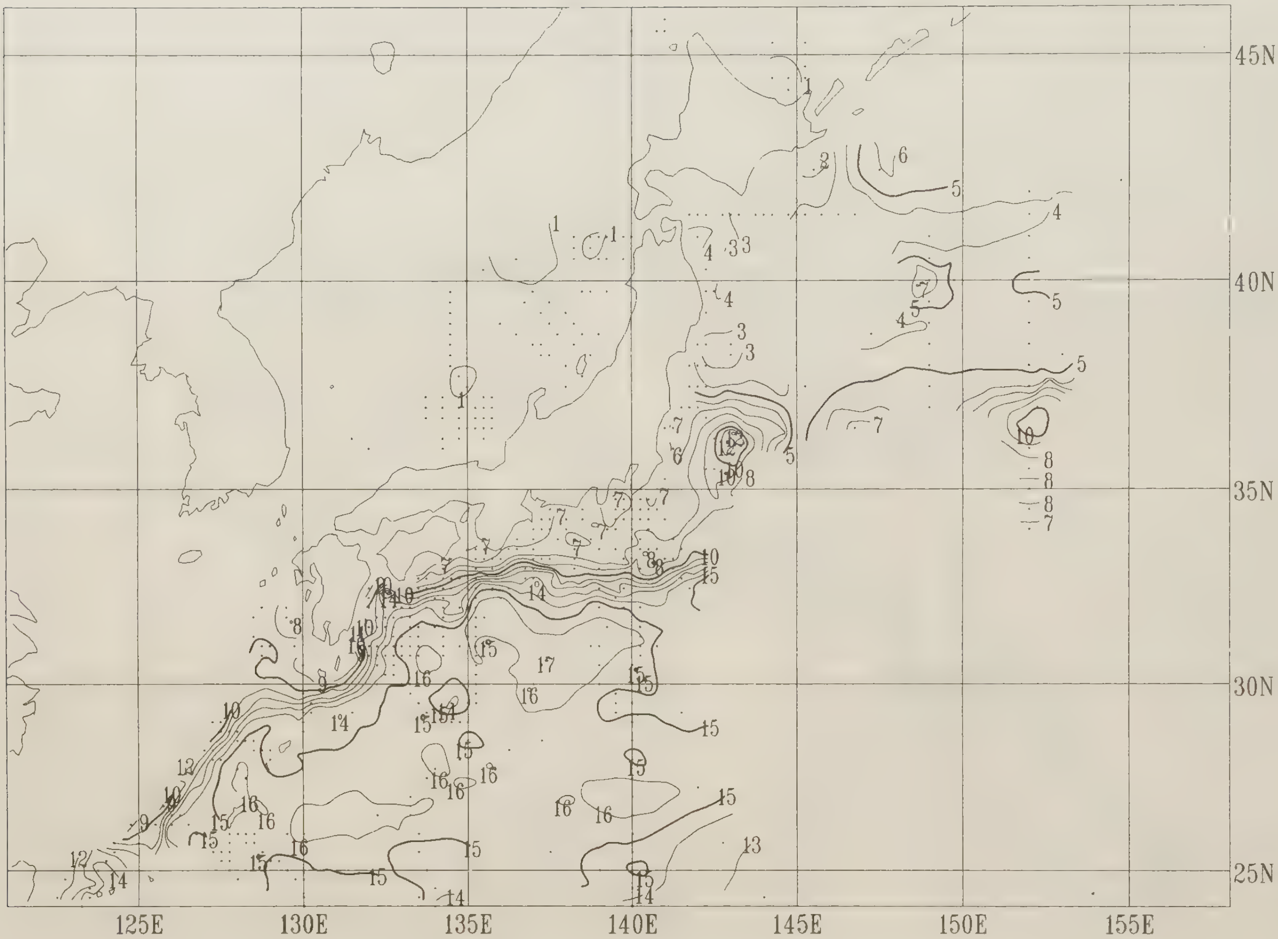
Fig.5 Subsurface (100m) temperatures in the seas adjacent to Japan for APR 1997. Contour interval is 1°C. Observation points are denoted by dots.

# 200m Temperatures in the Seas Adjacent to Japan



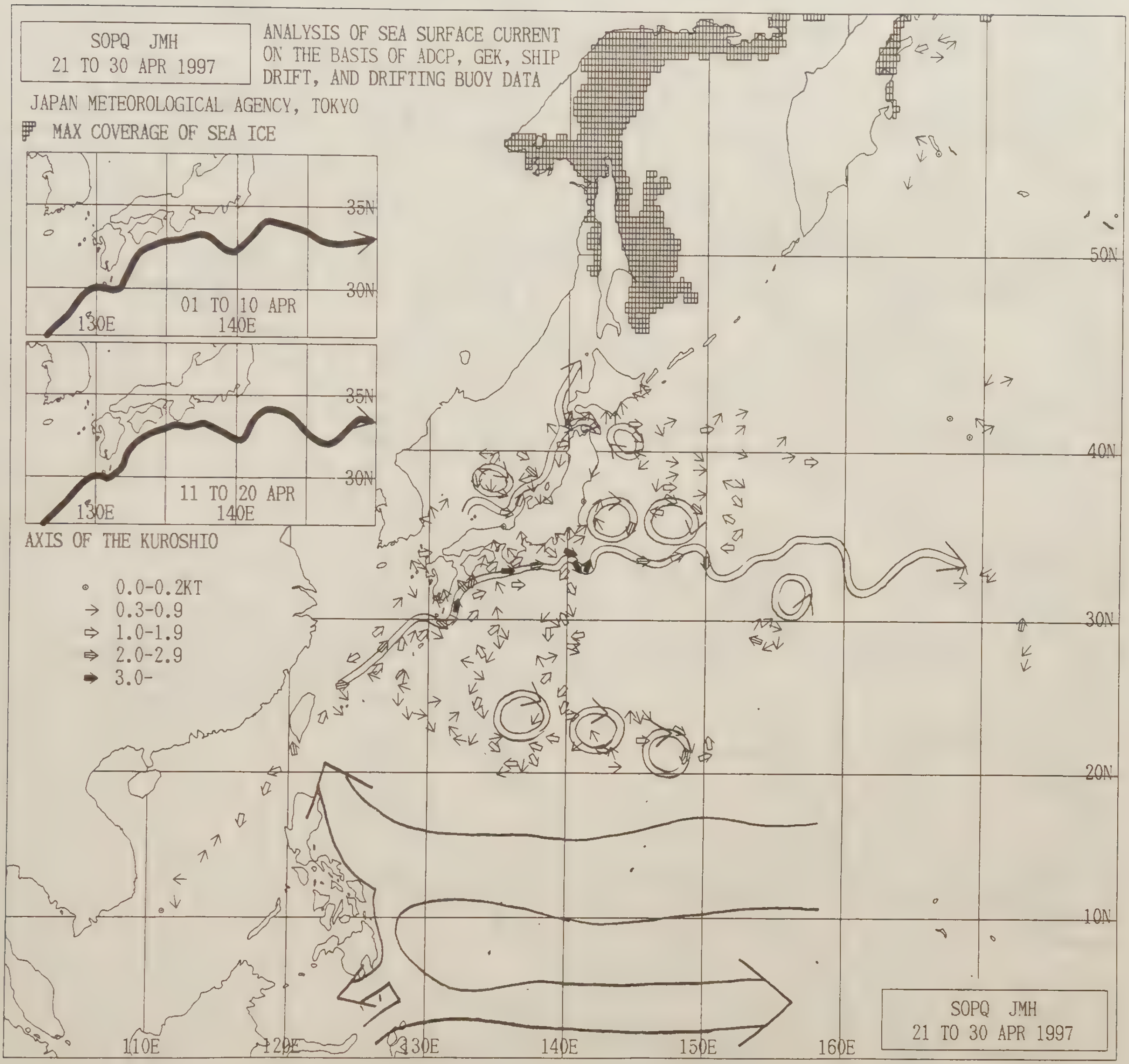

第6図　日本近海表層水温(深さ200m)図 (1997年 4月)

Fig.6 Subsurface (200m) temperatures in the seas adjacent to Japan for APR 1997. Contour interval is 1°C. Observation points are denoted by dots.



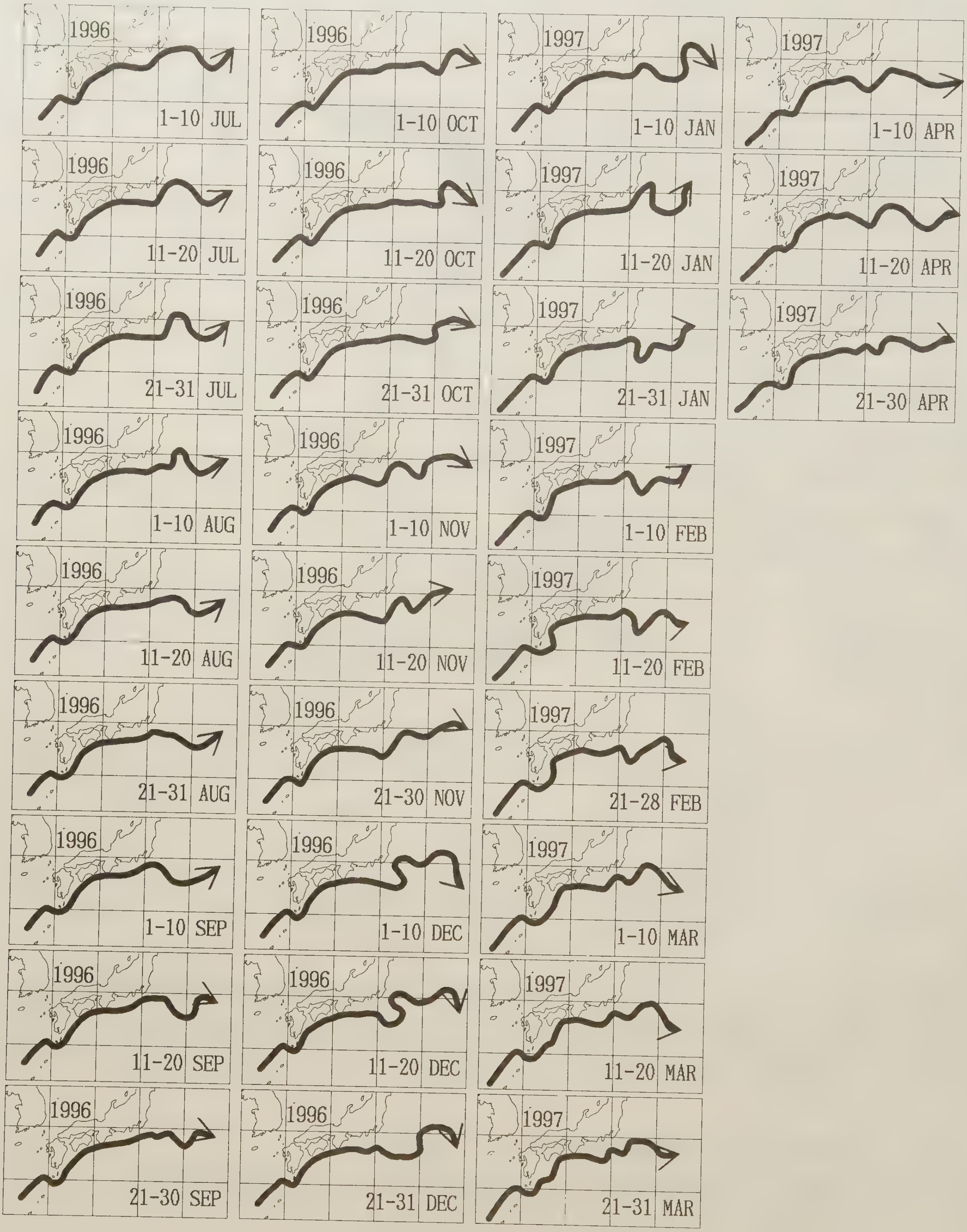

第7図　日本近海表層水温(深さ400m)図 (1997年 4月)

Fig.7 Subsurface (400m) temperatures in the seas adjacent to Japan for APR 1997. Contour interval is 1°C. Observation points are denoted by dots.



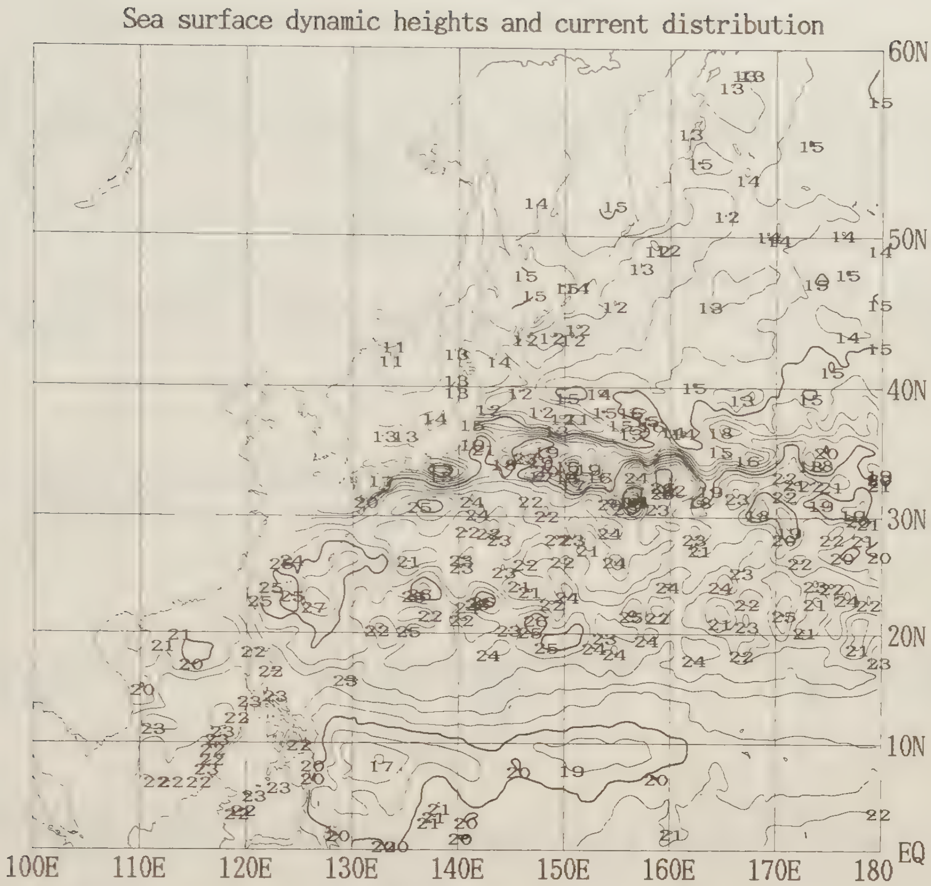

第8図　北西太平洋海流図（1997年 4月下旬）

Fig.8 Analysis of the sea surface current in the western North Pacific for the 3rd ten-day period in APR 1997. Small arrows indicate sea surface currents measured with acoustic Doppler current profilers, GEKs deployed in research vessels, and ship drift by merchant ships/drifting buoys during the month. Major currents such as the Kuroshio and the North Equatorial Current are denoted by larger open arrows.



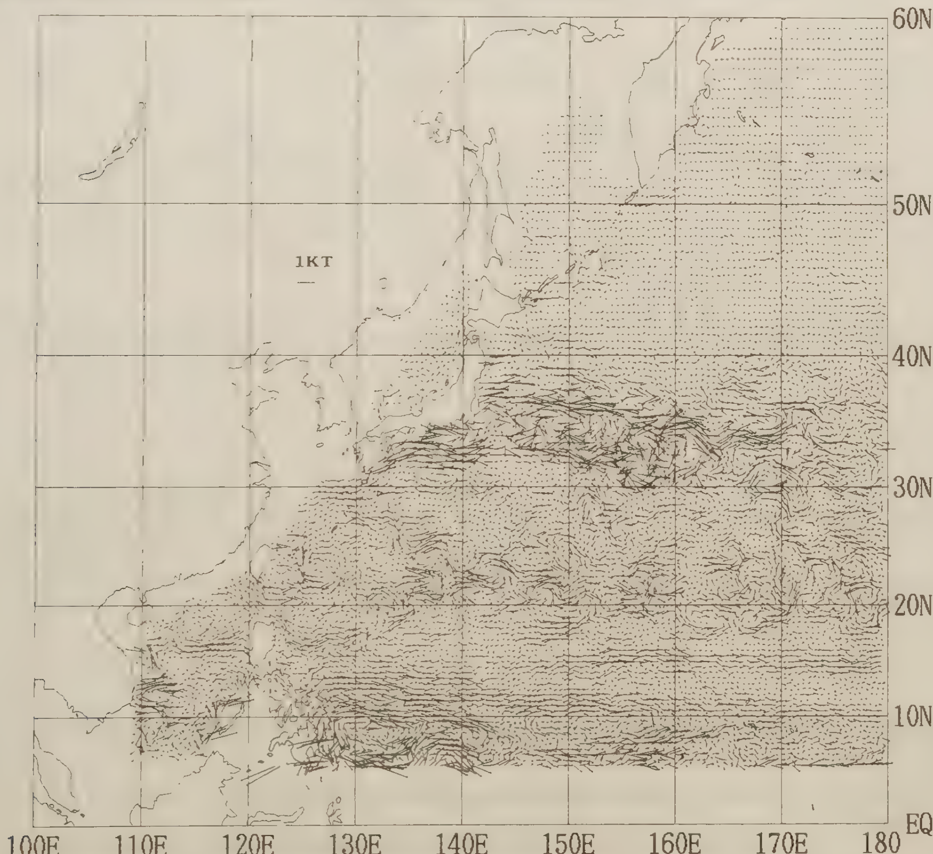

第9図 旬別黒潮流軸図

Fig.9 Time series of the Kuroshio axis



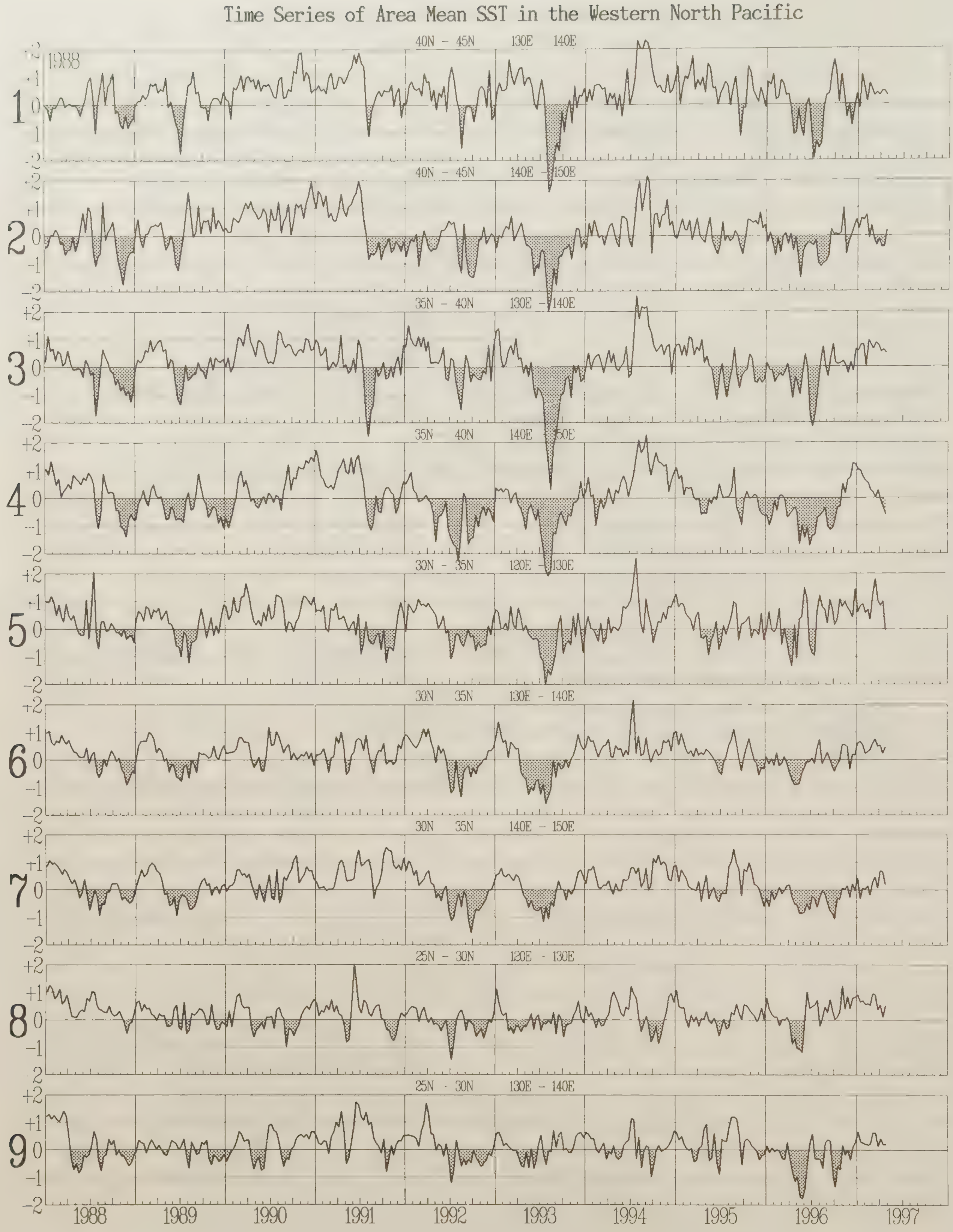

第10図 北西太平洋海面力学高度分布図(1997年 4月19日)

Fig.10 Sea surface dynamic heights (10cm) in the western North Pacific derived from the altimeter data of TOPEX/POSEIDON (APR 19,1997).
1500db surface is assumed to be no current surface.



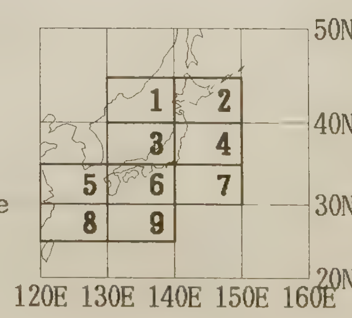

第11図 北西太平洋海流ベクトル図(1997年 4月19日)

Fig.11 Sea surface current vectors in the western North Pacific (APR 19,1997).
Vectors are derived from the sea surface dynamic heights from TOPEX/POSEIDON and sub-surface temperature distribution assuming the geostrophic relation.

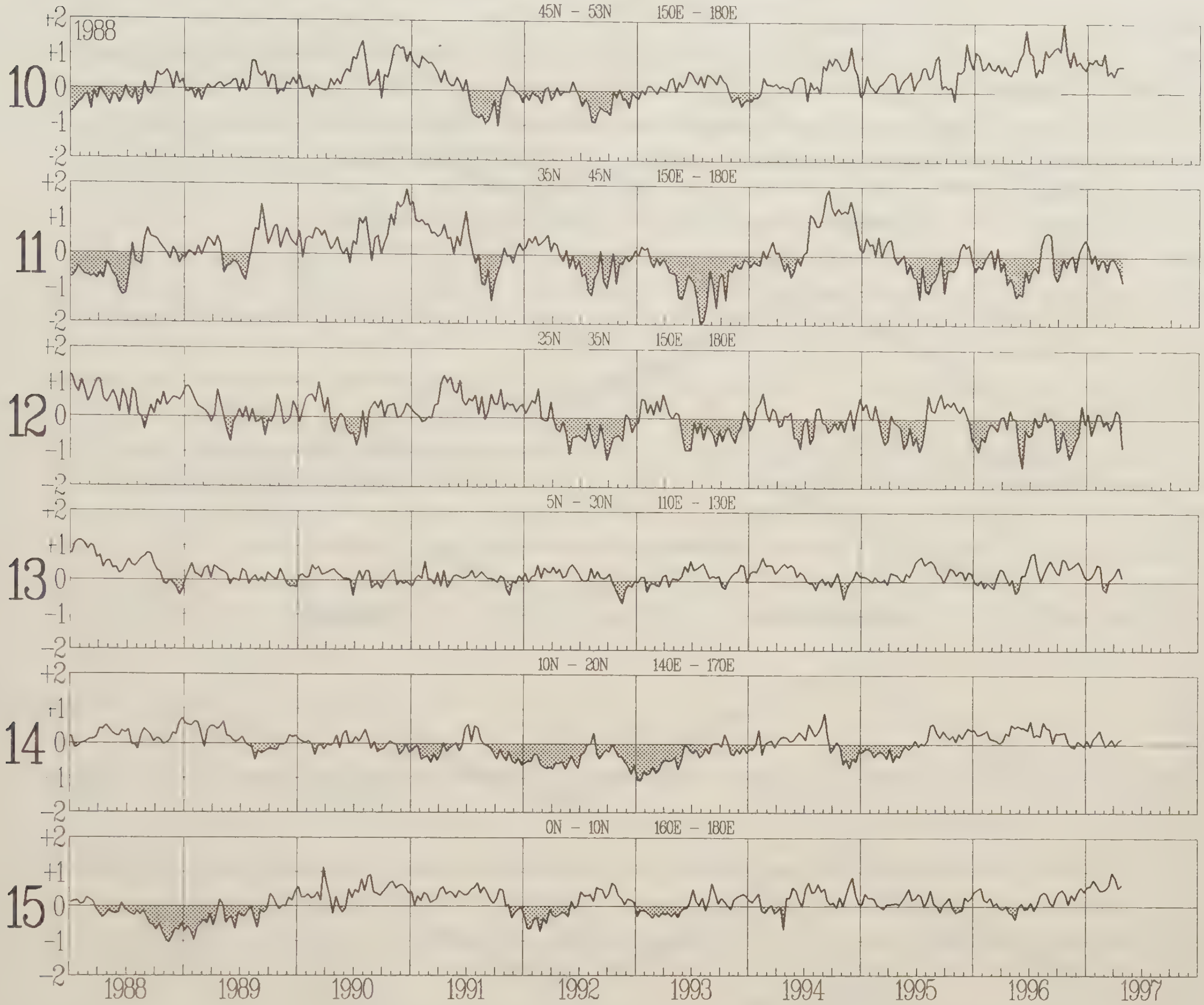



第12図　海域別旬平均海面水温平年偏差時系列図

Fig.12 Time series of the ten-day mean sea surface temperature anomalies (°C) in the western North Pacific for the areas shown in the right figure. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1961-90).

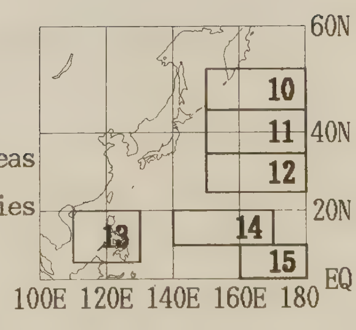


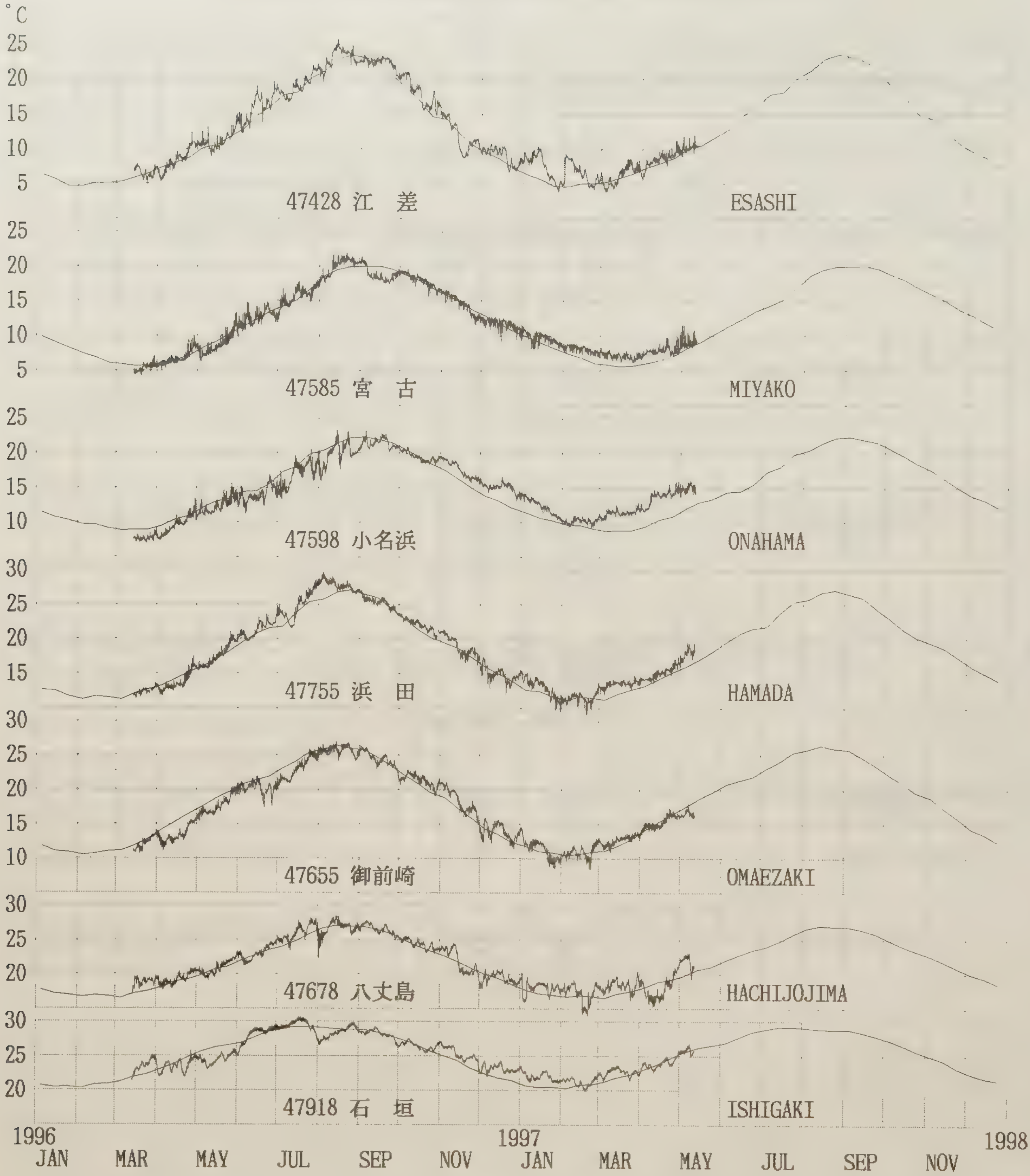
Time Series of Area Mean SST in the Western North Pacific

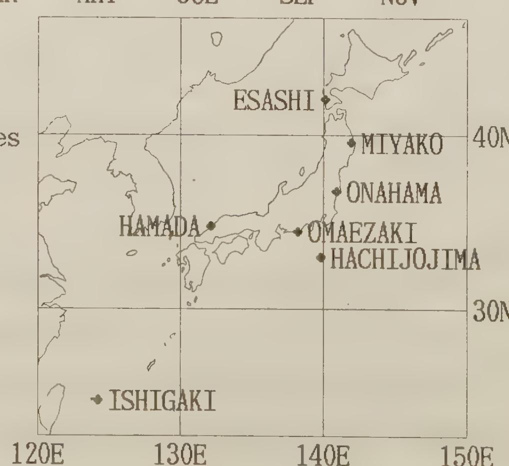



第12図　海域別旬平均海面水温平年偏差時系列図（つづき）

Fig.12 (continue) Time series of the ten-day mean sea surface temperature anomalies (°C) in the western North Pacific for the areas shown in the right figure. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1961-90).

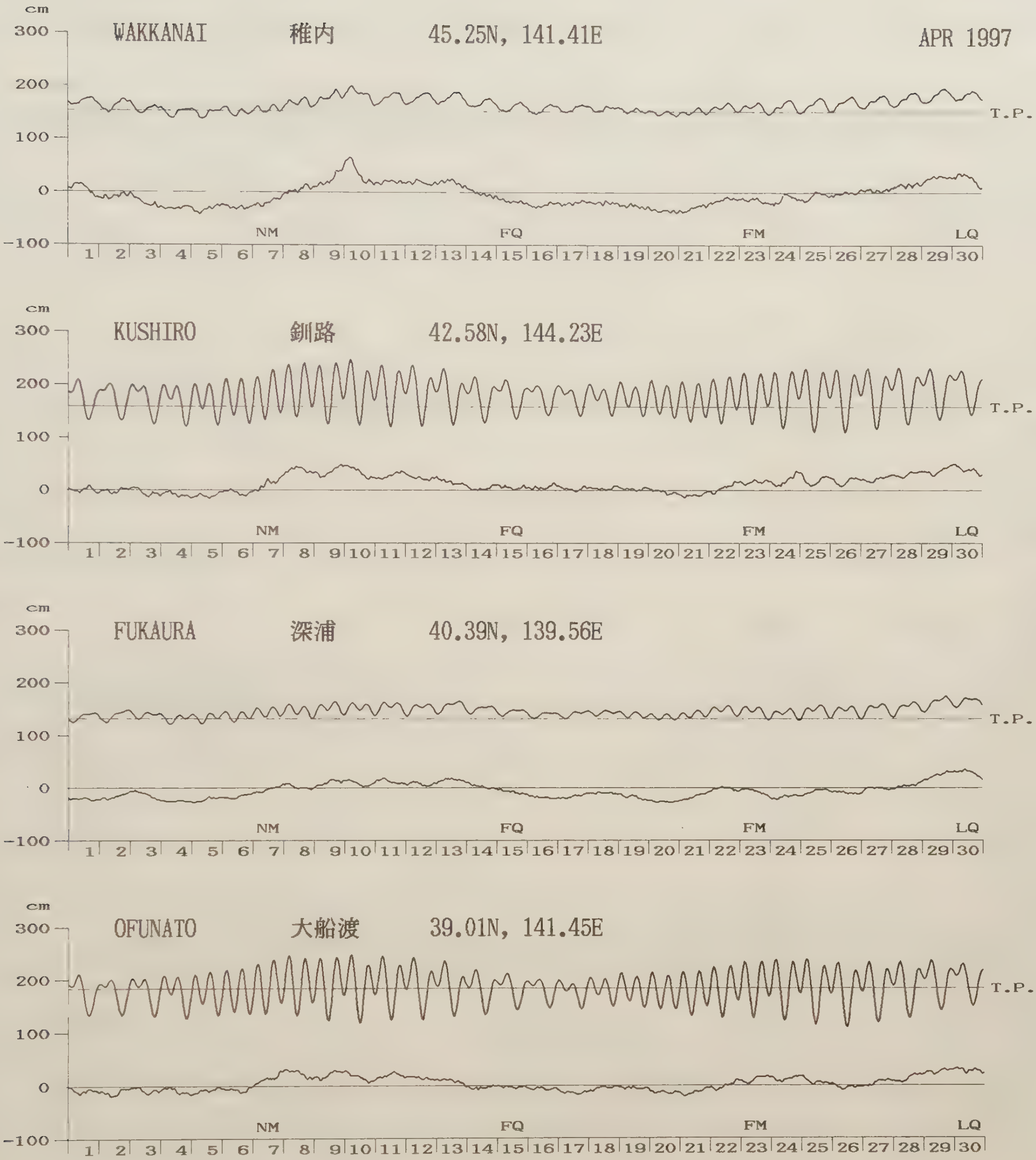




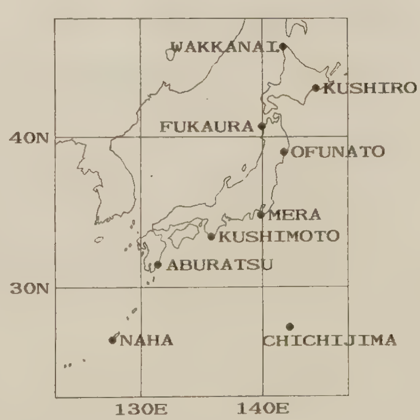

第13図 沿岸水温時系列図

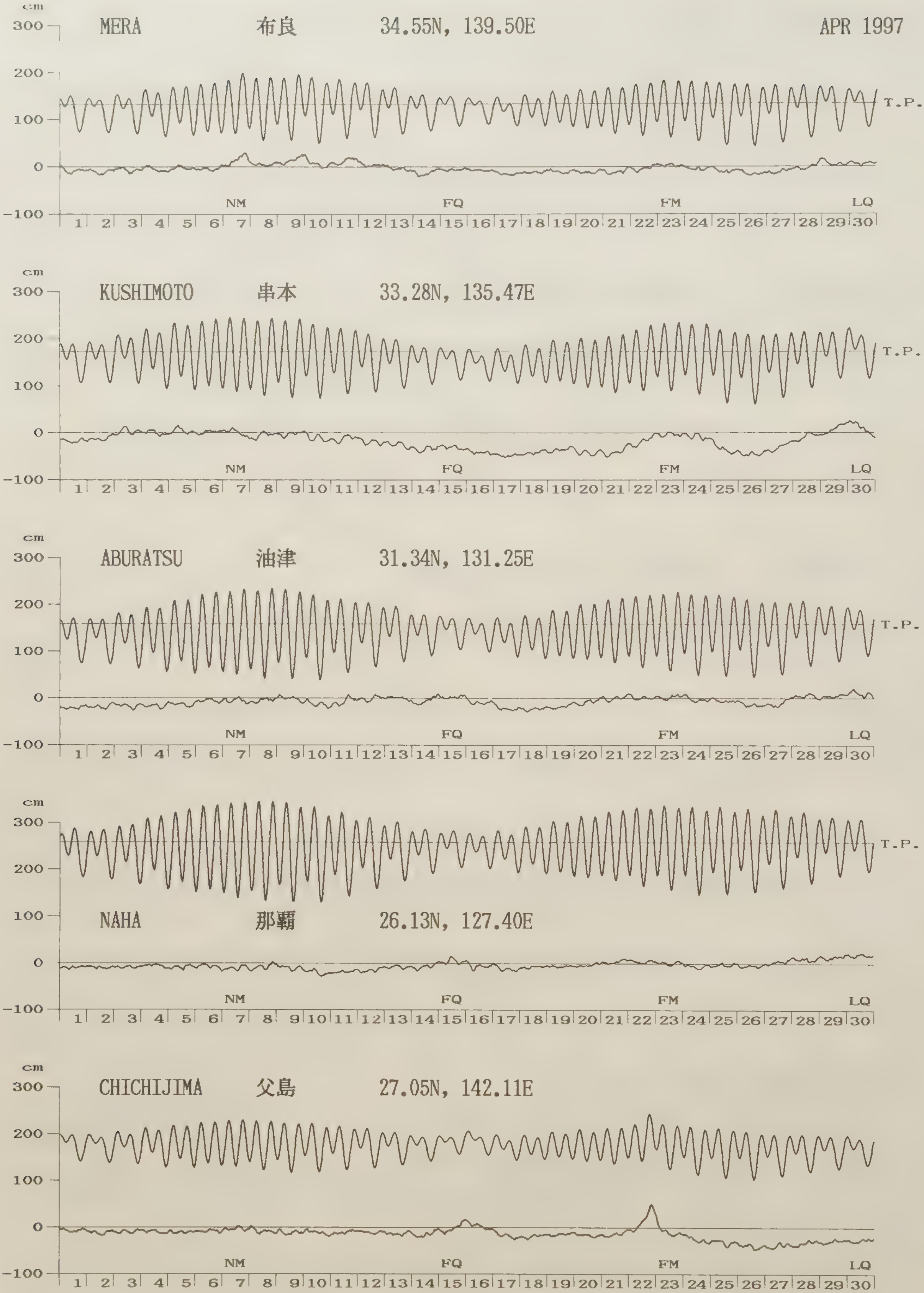
Fig.13 Time series of hourly coastal water temperatures (°C) measured at 7 coastal stations of the JMA shown in the right panel.
Thin lines show 10-day mean climatology.



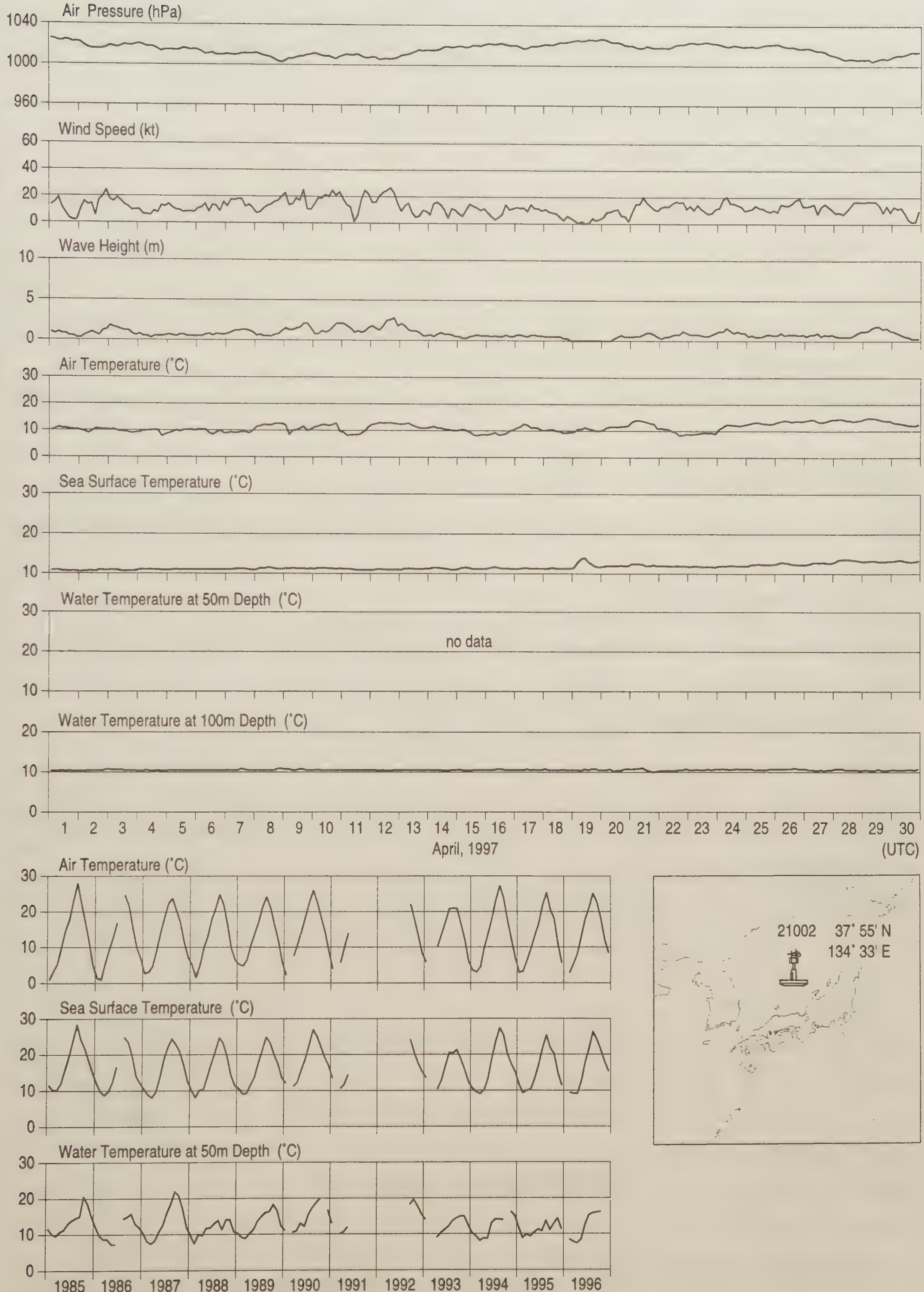

第14図 沿岸潮位時系列図 (1997年 4月)

Fig.14 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.
Sea level anomalies are two times values of the differences between the observations and the predicted astronominal tide.
FM: full moon, FQ: first quarter
NM: new moon, LQ: last quarter
T.P.: Mean sea level of Tokyo Bay (Tokyo Peil)



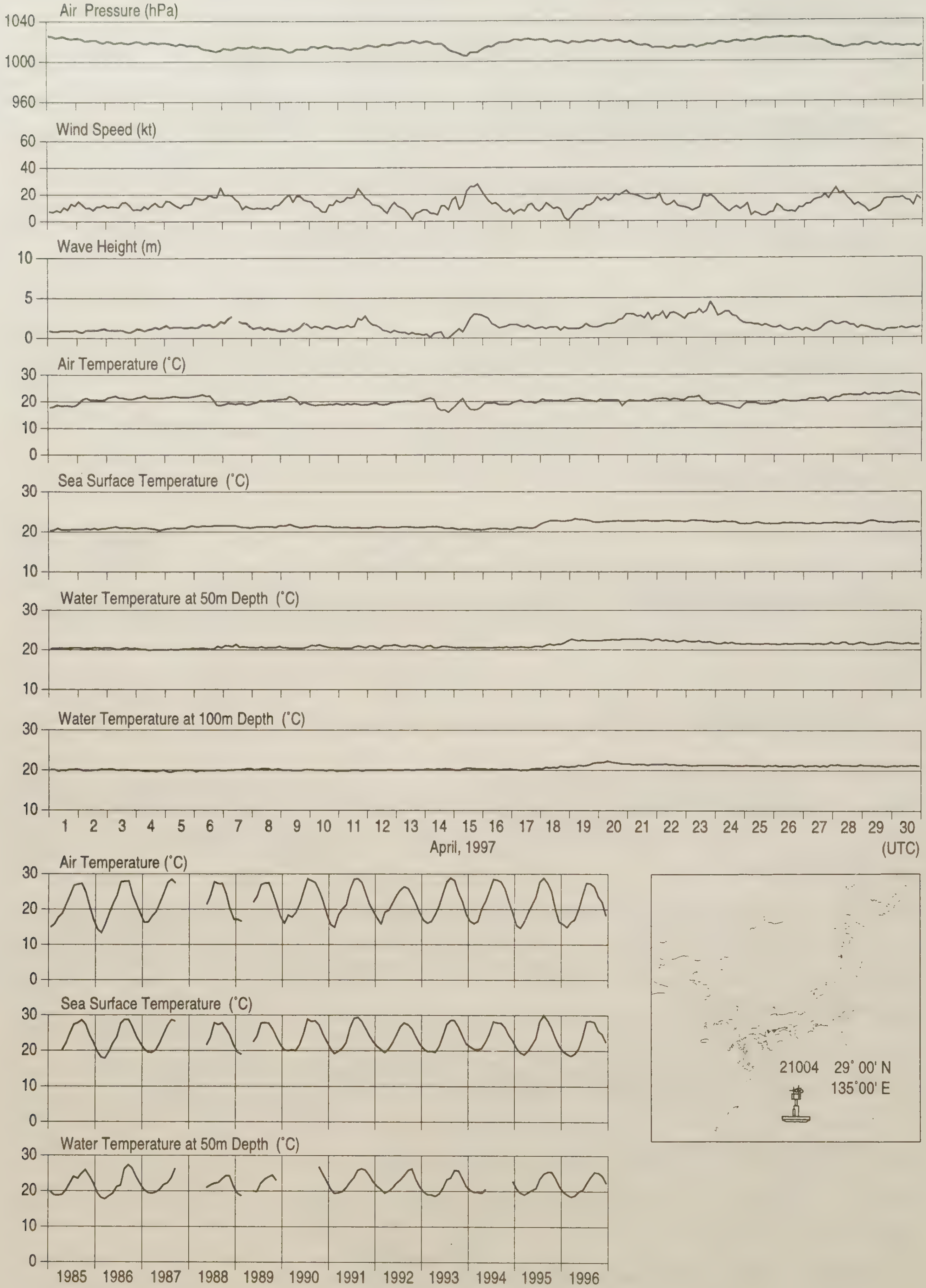



第14図 つづき
Fig.14 continue




第15図　海洋気象ブイロボットによる観測の時系列図（日本海：21002）
上段は３時間毎の観測値を、下段は月平均値を示す。

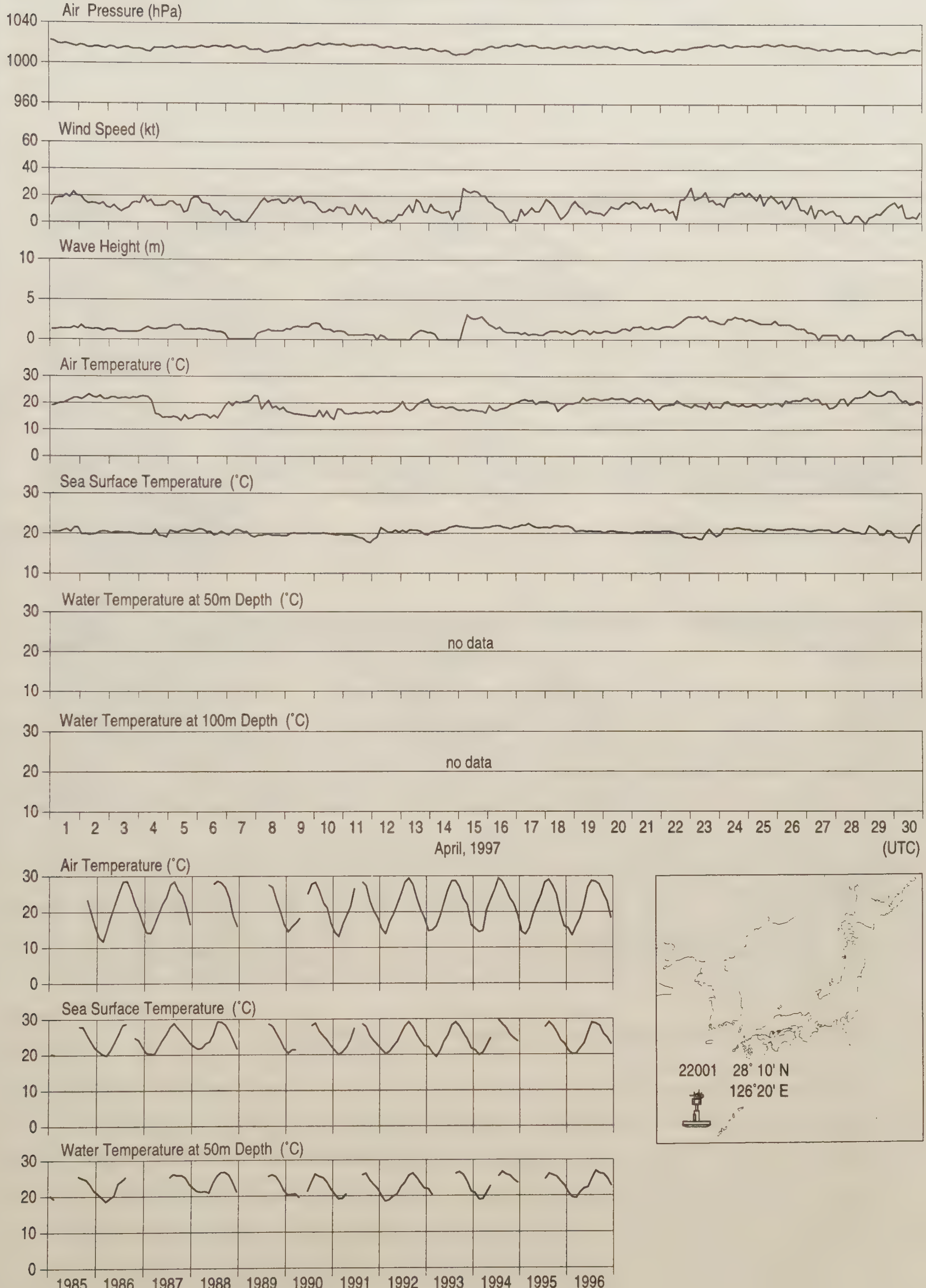
Fig. 15　Time series of JMA buoy observation in the Japan Sea (WMO ID No.21002).
The upper panel shows three hourly observation and the lower panel shows the monthly mean data.




第15図　海洋気象ブイロボットによる観測の時系列図（四国沖：21004）
上段は３時間毎の観測値を、下段は月平均値を示す。

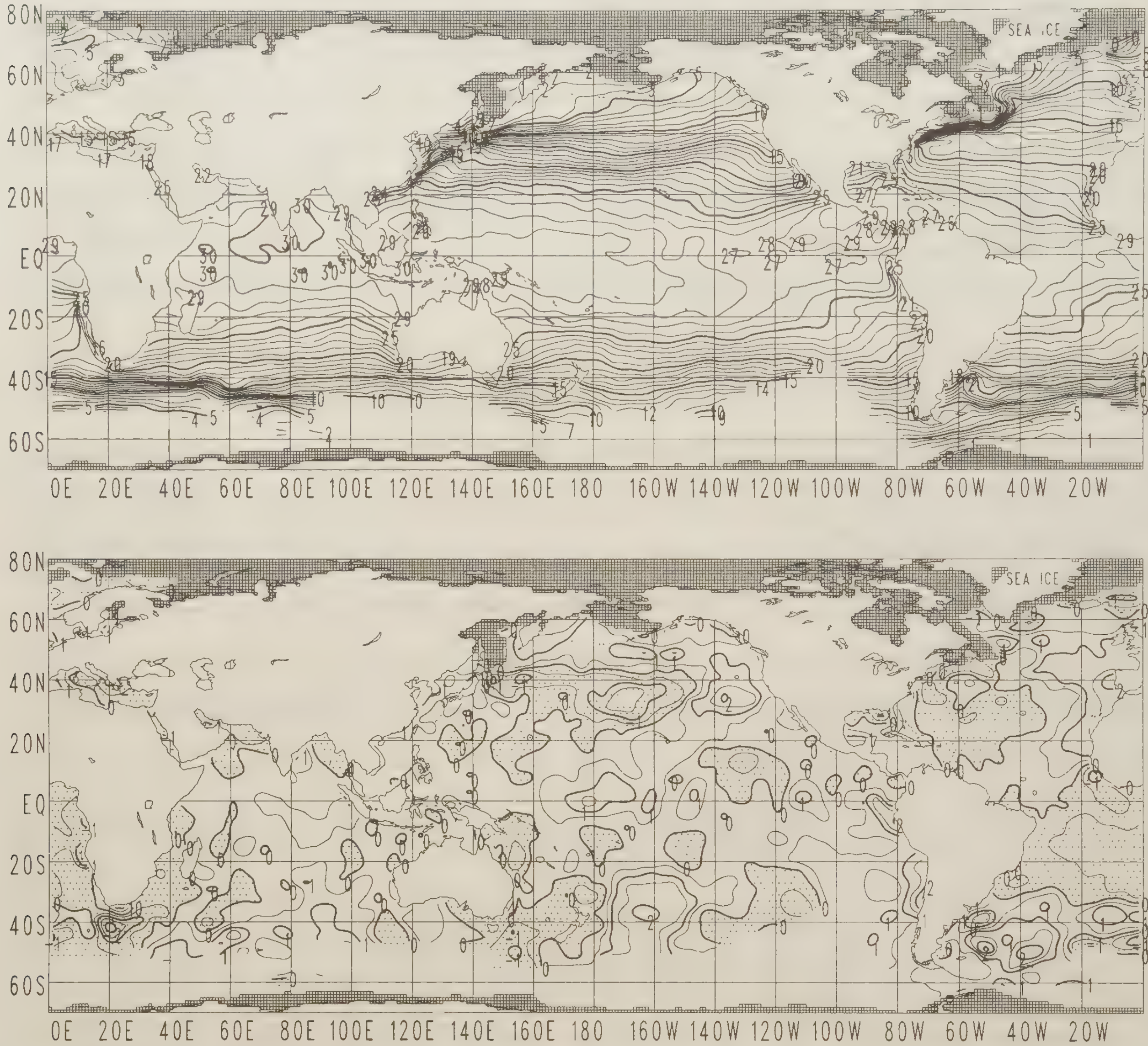
Fig. 15　Time series of JMA buoy observation south of Shikoku (WMO ID No.21004).
The upper panel shows three hourly observation and the lower panel shows the monthly mean data.

## Ocean Data Buoy Observations



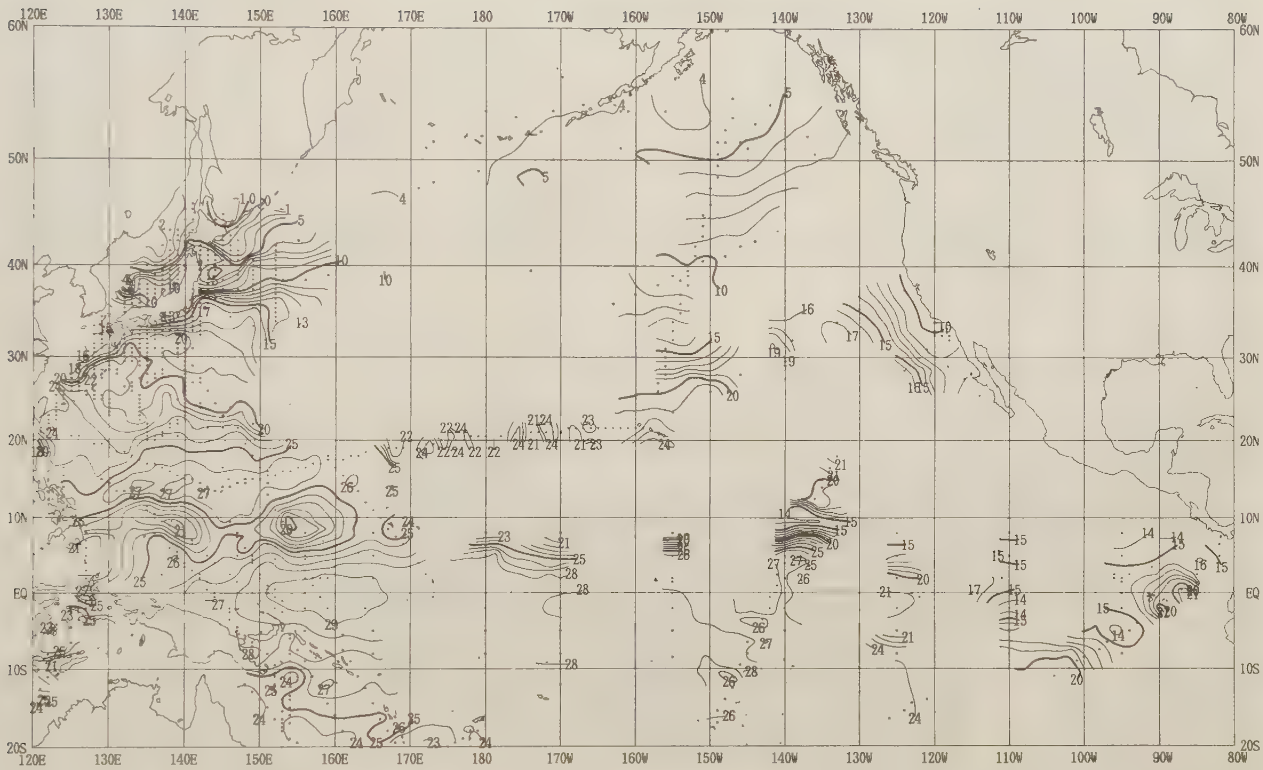

第15図　海洋気象ブイロボットによる観測の時系列図（東シナ海：22001）
上段は３時間毎の観測値を、下段は月平均値を示す。

Fig. 15　Time series of JMA buoy observation in the East China Sea (WMO ID No.22001).
The upper panel shows three hourly observation and the lower panel shows the monthly mean data.



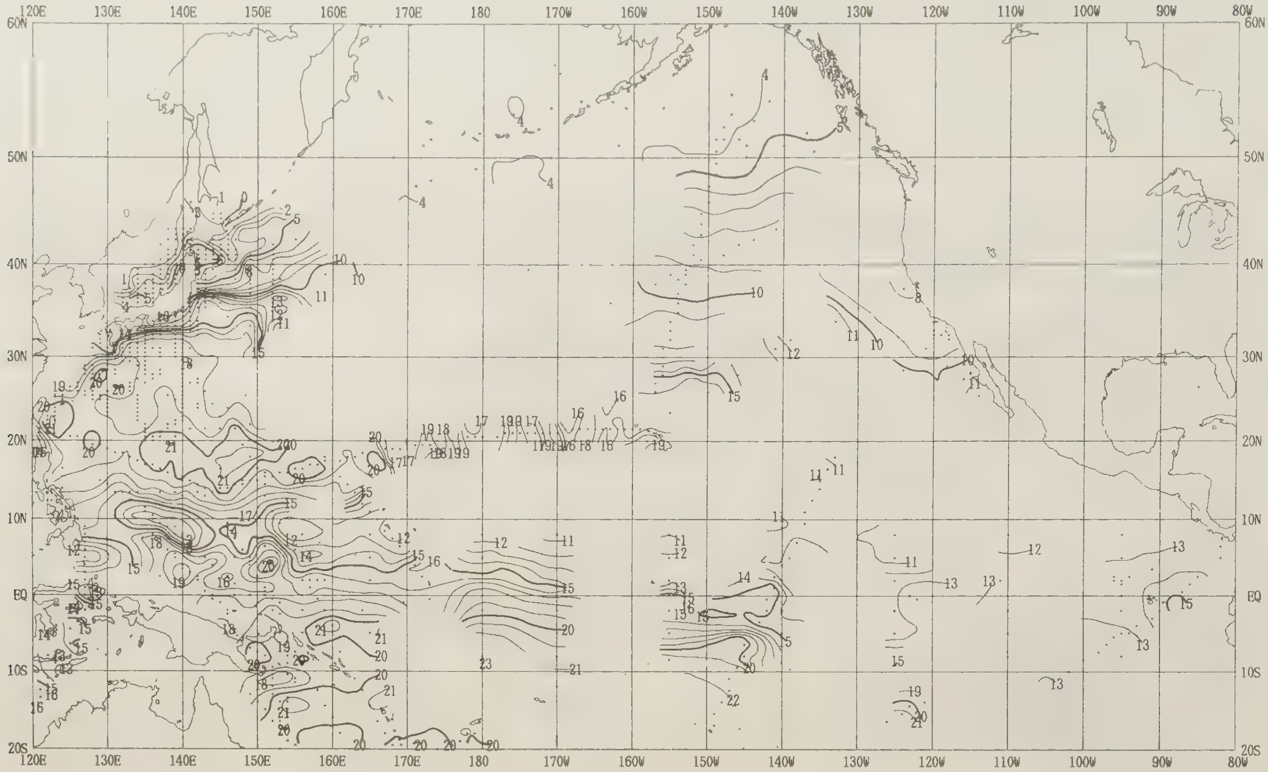

第16図　全球月平均海面水温図（上）及び偏差図（下）（1997年 4月）

Fig.16 Monthly mean sea surface temperature over the global ocean (top) and anomalies (bottom) for APR 1997. Anomalies are computed from the JMA climatology (1961-1990) (Marine Department of JMA, 1991, Climatic charts of sea surface temperatures of the western North Pacific and the global ocean). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown as thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).



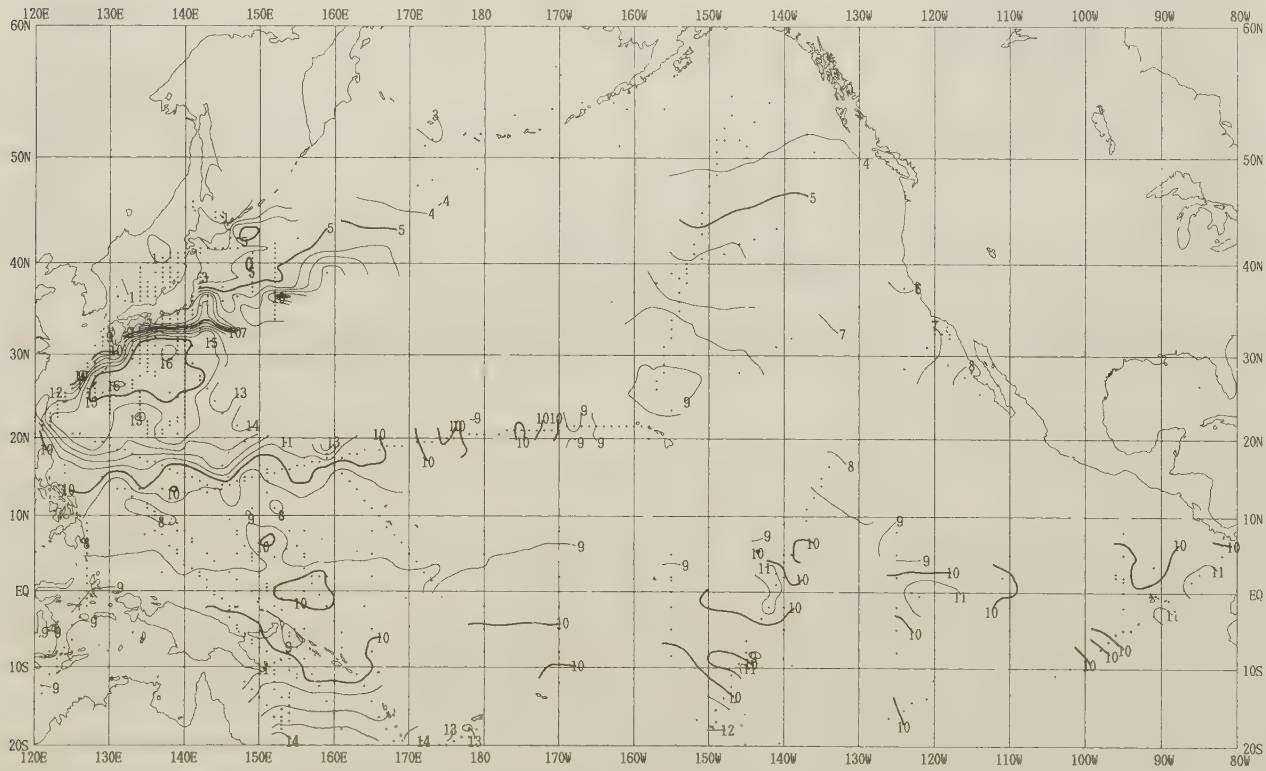

第17図　太平洋表層水温(深さ100m)図 (1997年 4月)

Fig.17 Subsurface (100m) temperatures in the Pacific Ocean for APR 1997.
Contour interval is 1°C. Observation points are denoted by dots.



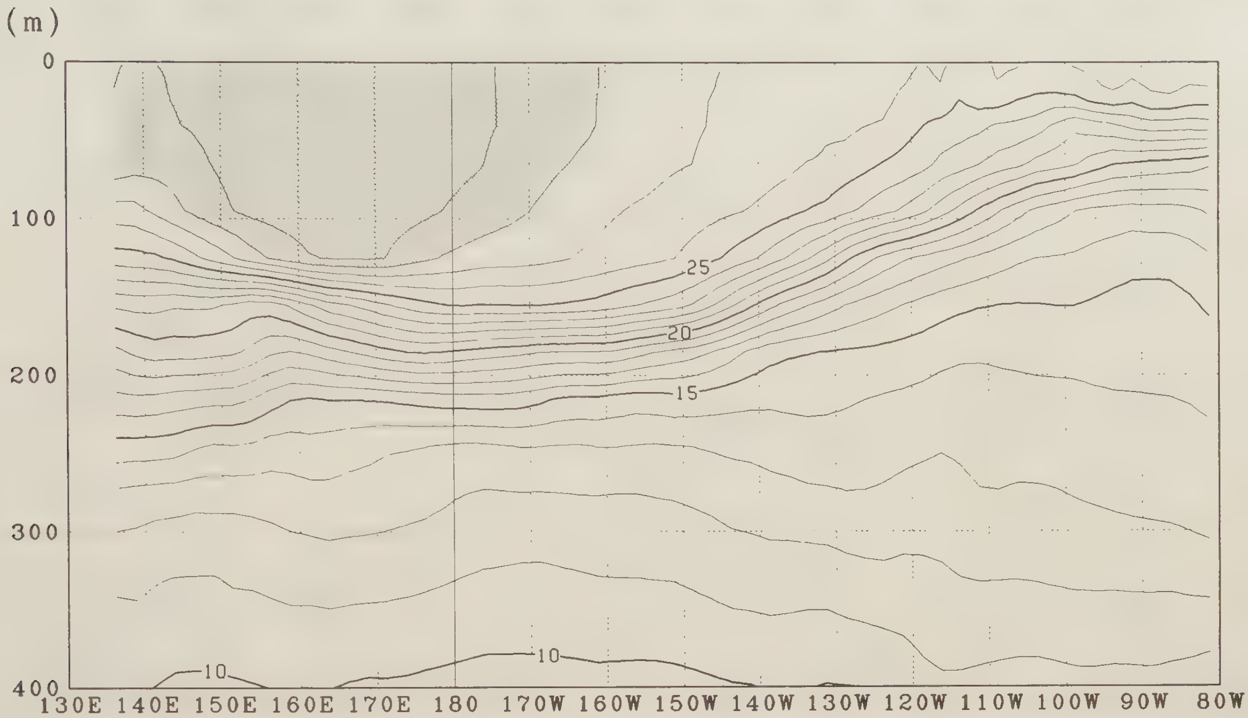

第18図　太平洋表層水温(深さ200m)図 (1997年 4月)

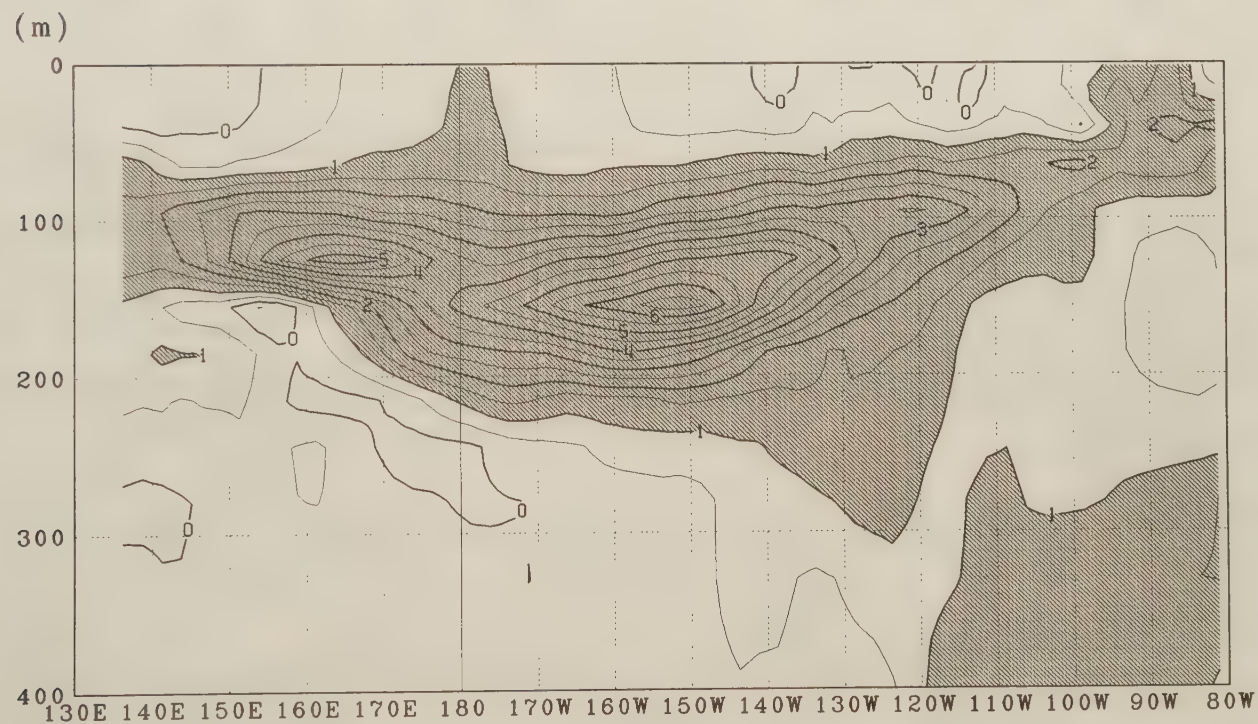
Fig.18  Subsurface (200m) temperatures in the Pacific Ocean for APR 1997.
Contour interval is 1°C.  Observation points are denoted by dots.




第19図　太平洋表層水温(深さ400m)図 (1997年 4月)

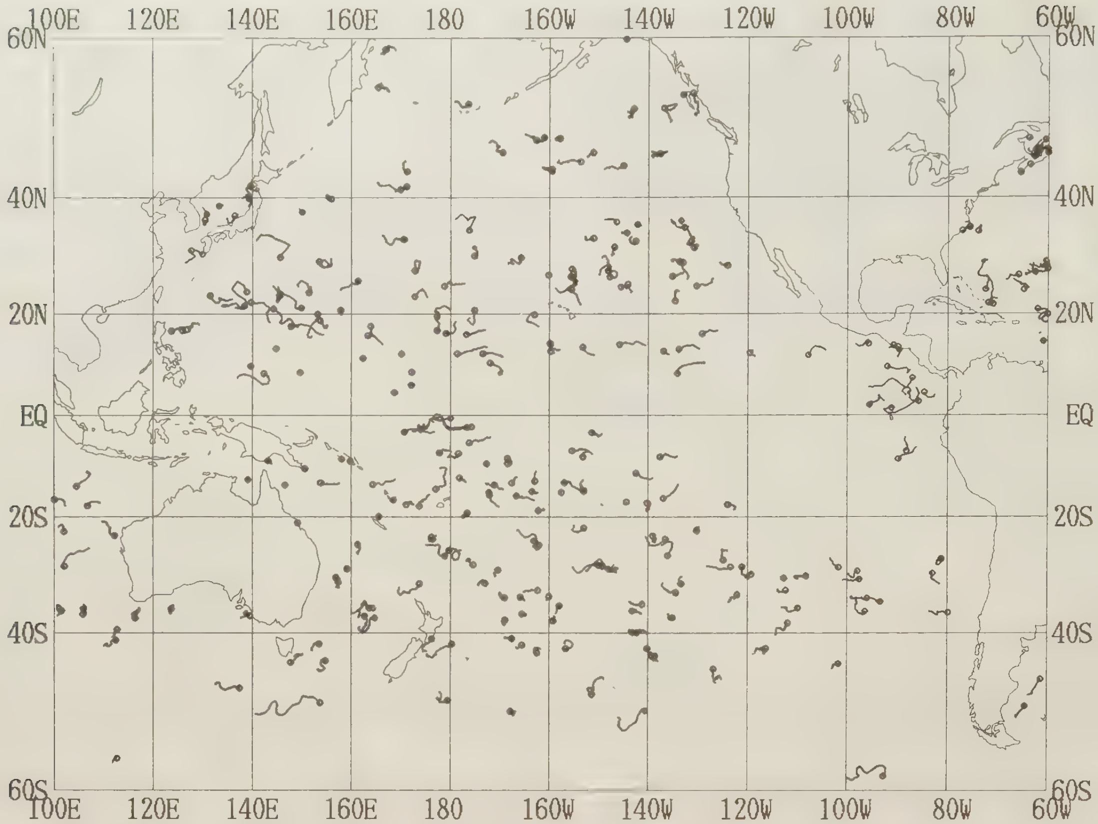
Fig.19  Subsurface (400m) temperatures in the Pacific Ocean for APR 1997.
Contour interval is 1°C.  Observation points are denoted by dots.



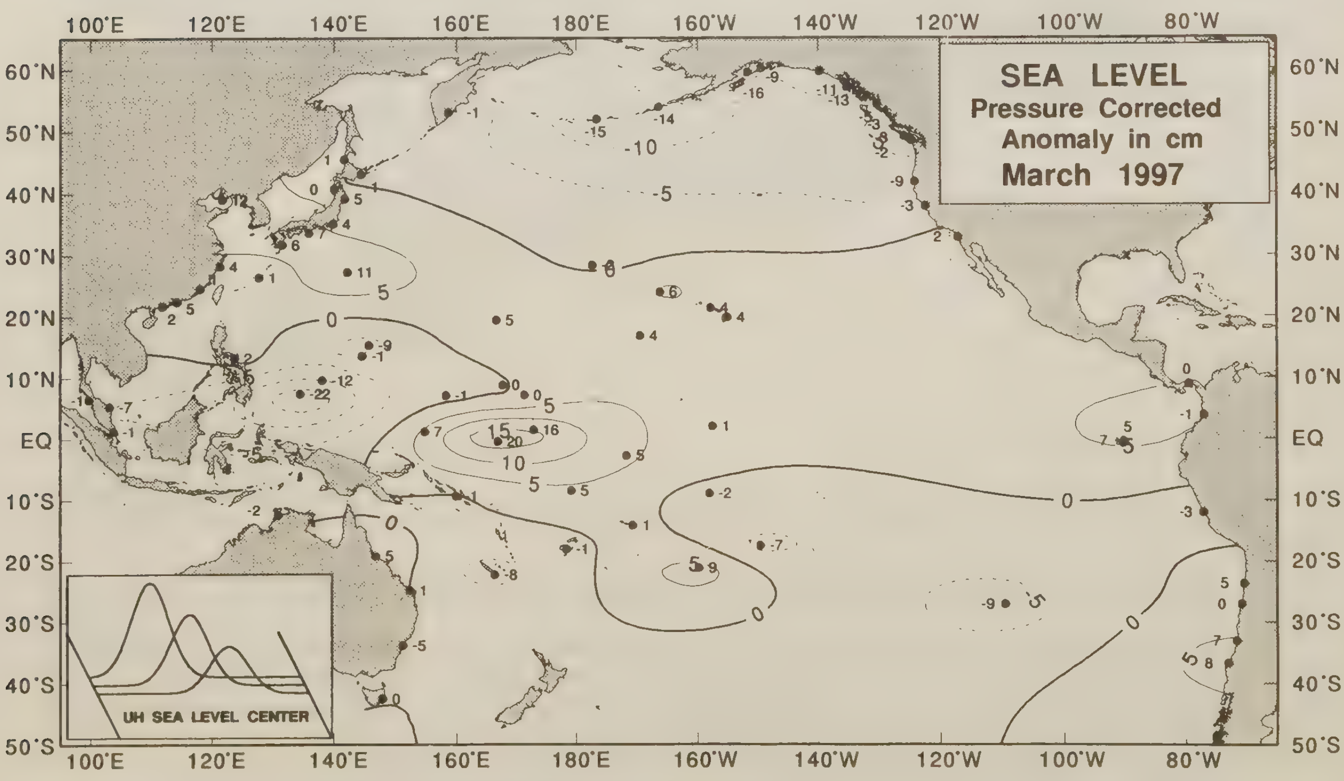

第20図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（1997年 4月）

Fig.20 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for APR 1997. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in top panel are shaded. In bottom panel values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-1995 base period means.




第21図　太平洋ブイ流跡図( 1997年 4月 )

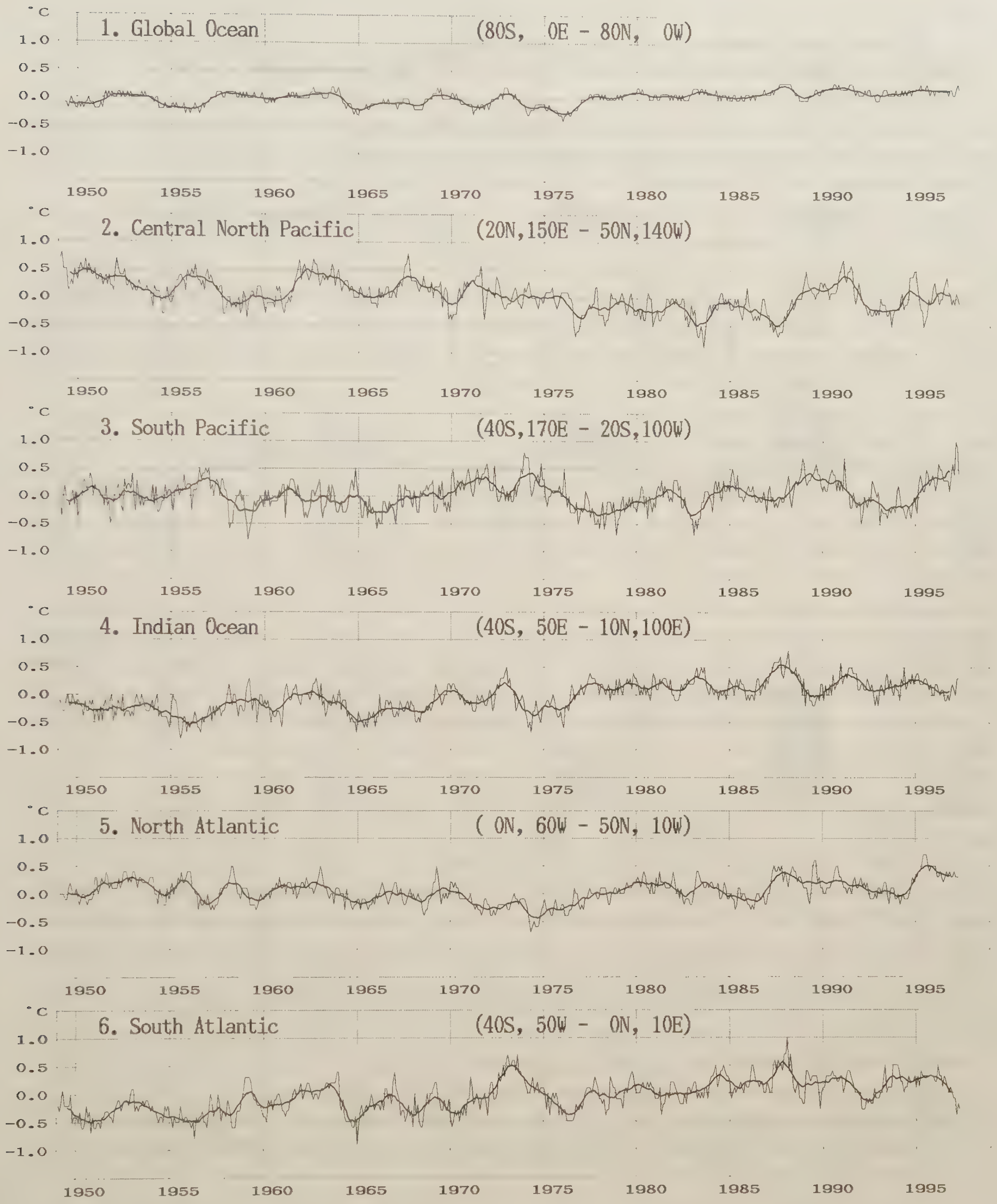
Fig.21 Movements of drifting buoys in the Pacific Ocean during APR 1997.
Each track is for one buoy. Small circles represent last positions for the month.




第22図　太平洋海面水位偏差図 ( 1997年 3月 )

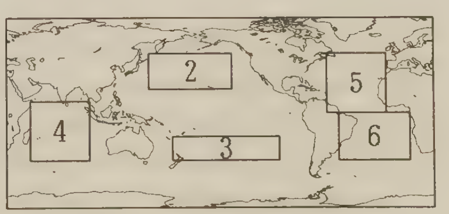
Fig.22 Monthly sea level anomalies for MAR 1997 obtained from mean sea level (1975-1995) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Dept. of Oceanography, Univ. of Hawaii.

## Long-term Variation of Monthly Mean SST Anomalies

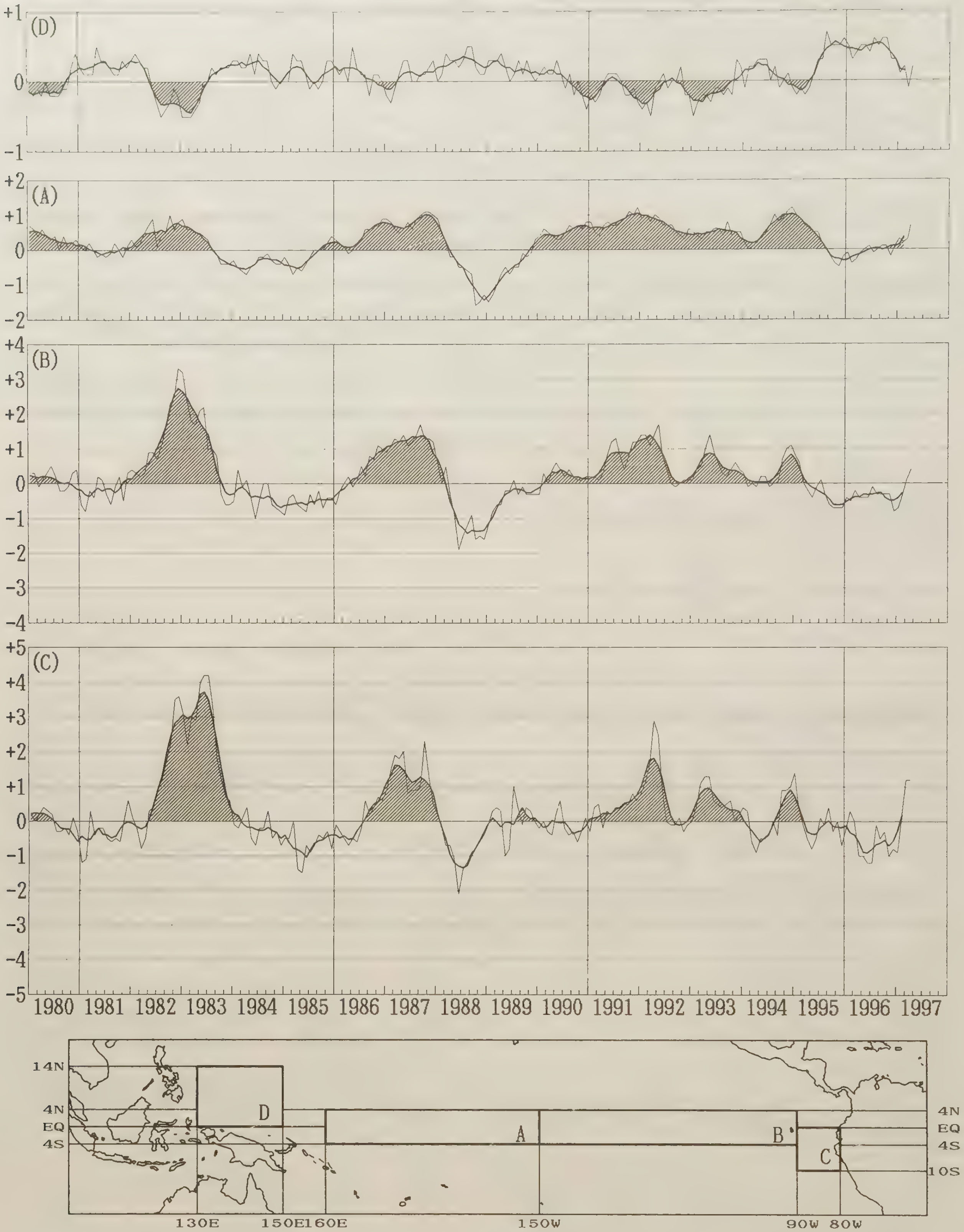



第23図 海域平均海面水温偏差の長期変動

Fig.23 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1961-90). Thin lines show the monthly mean and thick lines their 13-month running means.



Time Series of Equatorial Pacific SST Anomalies



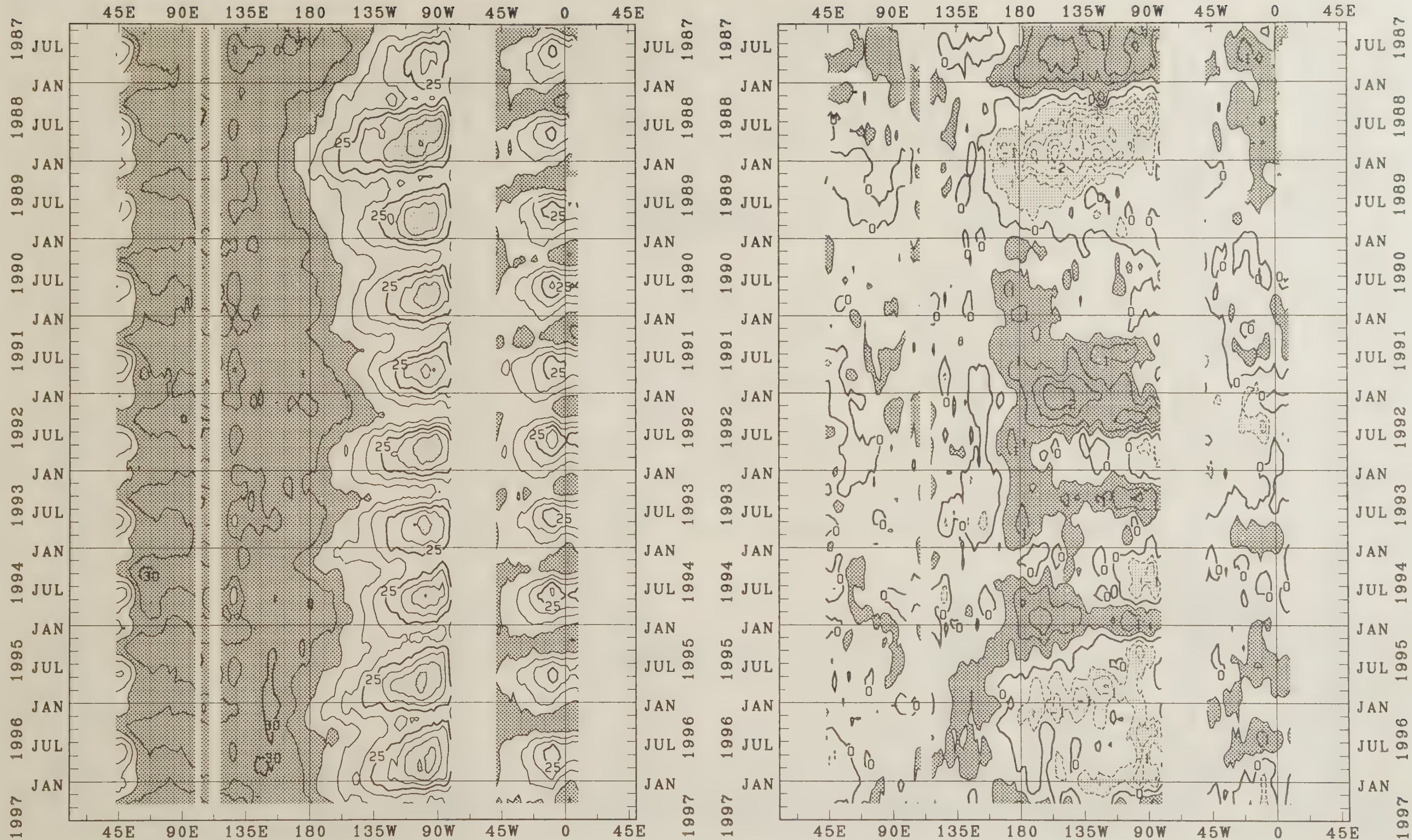

第24図　太平洋赤道域の海面水温偏差時系列図

Fig.24 Time series of monthly mean SST anomalies (°C) in the equatorial Pacific Ocean for the areas indicated at the bottom.
Thin lines show the monthly means and thick lines their 5-month running means. Positive anomalies (A, B, C) and negative anomalies (D) are shaded. Anomalies are computed from the JMA climatology (1961-1990).

| | SEA SURFACE TEMPERATURE AND ANOMALY (°C) | | | | | | | | SOI | SEA LEVEL PRESSURE ANOMALY (hPa) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | REGION D 14N-EQ 130E-150E | | REGION A 4N-4S 160E-150W | | REGION B 4N-4S 150W-90W | | REGION C EQ-10S 90W-80W | | SOI | TAHITI 17-33S 149-37W | DARWIN 12-24S 130-52E |
| JAN 95 | 28.3 | -0.2 | 29.0 | 1.0 | 26.2 | 0.8 | 25.7 | 1.4 | -0.4 | -0.3 | 0.6 |
| FEB 95 | 28.2 | -0.1 | 28.9 | 0.9 | 26.8 | 0.6 | 26.1 | 0.4 | -0.2 | 0.6 | 1.1 |
| MAR 95 | 28.2 | -0.2 | 28.8 | 0.7 | 26.9 | 0.0 | 25.8 | -0.1 | 0.4 | 0.3 | -0.5 |
| APR 95 | 28.7 | -0.1 | 28.8 | 0.6 | 26.9 | -0.2 | 24.6 | -0.5 | -1.4 | -1.6 | -0.0 |
| MAY 95 | 29.2 | 0.1 | 29.0 | 0.5 | 26.2 | -0.4 | 23.1 | -0.8 | -1.0 | -0.7 | 0.6 |
| JUN 95 | 29.6 | 0.3 | 29.0 | 0.5 | 26.0 | -0.1 | 22.2 | -0.5 | -0.1 | 0.3 | 0.4 |
| JUL 95 | 29.5 | 0.3 | 28.7 | 0.2 | 25.3 | 0.1 | 21.7 | 0.1 | 0.4 | 0.4 | -0.4 |
| AUG 95 | 29.8 | 0.7 | 28.4 | 0.0 | 24.3 | -0.3 | 20.5 | -0.1 | 0.0 | 0.4 | 0.3 |
| SEP 95 | 29.7 | 0.5 | 28.1 | -0.2 | 24.0 | -0.6 | 20.7 | 0.4 | 0.2 | 0.4 | -0.0 |
| OCT 95 | 29.8 | 0.5 | 28.0 | -0.4 | 23.9 | -0.7 | 20.4 | -0.3 | -0.3 | -0.7 | -0.5 |
| NOV 95 | 29.7 | 0.5 | 27.9 | -0.5 | 23.9 | -0.7 | 21.5 | 0.0 | 0.1 | 0.1 | -0.1 |
| DEC 95 | 29.5 | 0.6 | 28.0 | -0.2 | 24.2 | -0.7 | 21.9 | -0.7 | -0.5 | -0.9 | 0.0 |
| JAN 96 | 29.0 | 0.5 | 27.9 | -0.1 | 25.0 | -0.4 | 24.1 | -0.2 | 0.8 | 1.0 | -0.7 |
| FEB 96 | 28.6 | 0.3 | 27.6 | -0.4 | 25.7 | -0.5 | 26.0 | 0.3 | 0.1 | -0.2 | -0.5 |
| MAR 96 | 28.8 | 0.4 | 27.8 | -0.3 | 26.7 | -0.2 | 25.9 | 0.0 | 0.7 | 1.0 | -0.3 |
| APR 96 | 29.3 | 0.5 | 28.1 | -0.1 | 26.7 | -0.4 | 24.1 | -1.0 | 0.8 | 0.5 | -0.5 |
| MAY 96 | 29.6 | 0.5 | 28.5 | 0.0 | 26.2 | -0.4 | 22.9 | -1.0 | 0.3 | 1.2 | 1.2 |
| JUN 96 | 29.7 | 0.4 | 28.6 | 0.1 | 25.7 | -0.4 | 21.5 | -1.2 | 1.4 | 1.6 | -0.2 |
| JUL 96 | 29.8 | 0.6 | 28.4 | -0.1 | 25.1 | -0.1 | 20.4 | -1.2 | 0.7 | 0.6 | -0.6 |
| AUG 96 | 29.6 | 0.5 | 28.4 | 0.0 | 24.3 | -0.3 | 20.5 | -0.1 | 0.4 | 0.4 | -0.3 |
| SEP 96 | 29.8 | 0.6 | 28.4 | 0.1 | 24.3 | -0.3 | 19.8 | -0.5 | 0.5 | -0.7 | -1.7 |
| OCT 96 | 29.9 | 0.6 | 28.5 | 0.1 | 24.3 | -0.3 | 20.4 | -0.3 | 0.4 | -0.1 | -0.8 |
| NOV 96 | 29.5 | 0.3 | 28.2 | -0.2 | 24.3 | -0.3 | 20.5 | -1.0 | -0.0 | -0.5 | -0.5 |
| DEC 96 | 29.2 | 0.3 | 28.3 | 0.1 | 24.1 | -0.8 | 21.8 | -0.8 | 0.8 | -0.3 | -1.9 |
| JAN 97 | 28.6 | 0.1 | 28.3 | 0.3 | 24.7 | -0.7 | 23.4 | -0.9 | 0.3 | 1.7 | 0.9 |
| FEB 97 | 28.5 | 0.2 | 28.2 | 0.2 | 25.9 | -0.3 | 25.9 | 0.2 | 1.2 | 1.0 | -1.9 |
| MAR 97 | 28.3 | -0.1 | 28.4 | 0.3 | 27.0 | 0.1 | 27.1 | 1.2 | -0.6 | -0.5 | 0.9 |
| APR 97 | 29.0 | 0.2 | 29.1 | 0.9 | 27.5 | 0.4 | 26.3 | 1.2 | -1.1 | 0.4 | 2.3 |

第1表　エルニーニョ監視指数

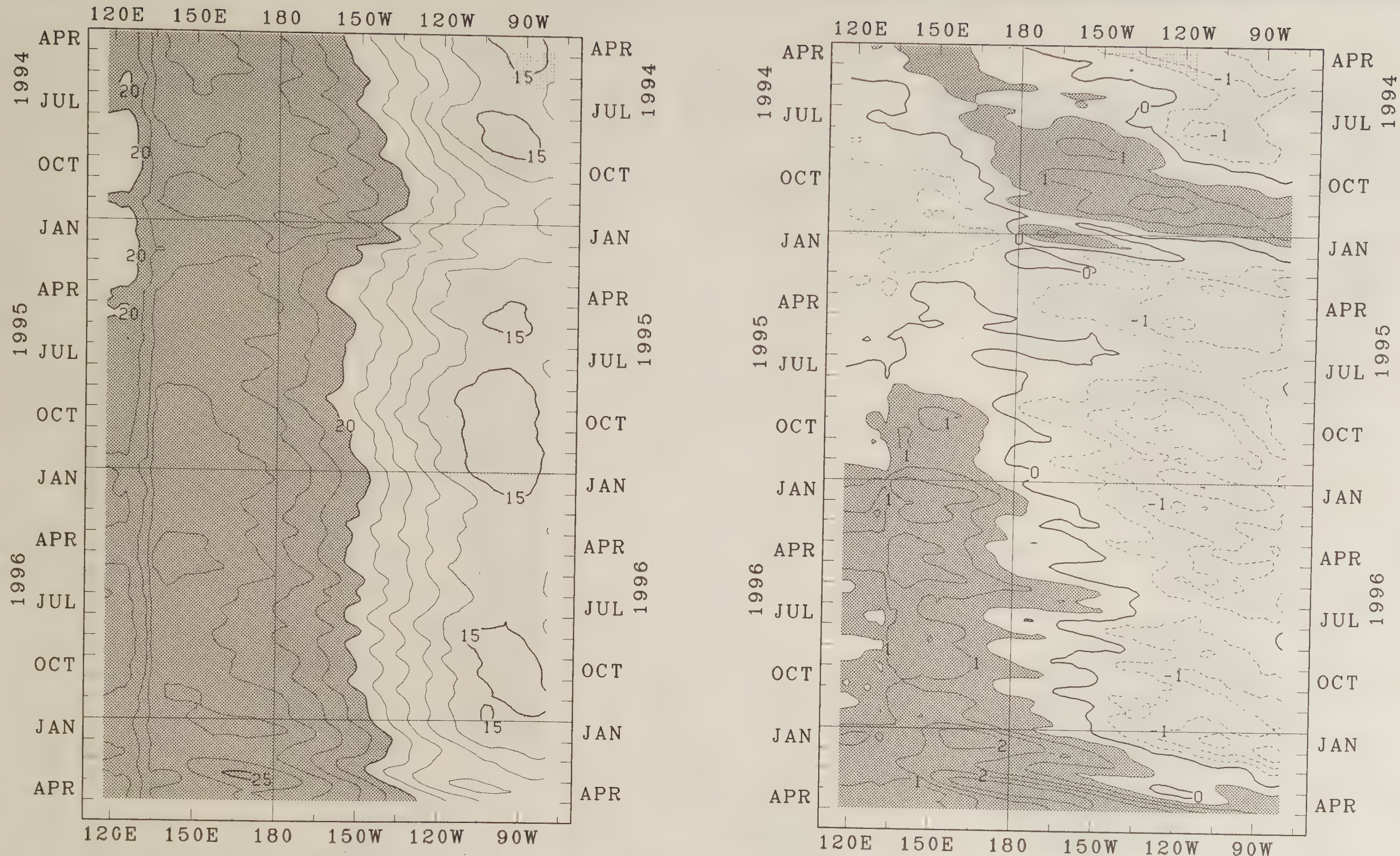
Table 1　El Nino Monitoring indices




第 25 図 赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

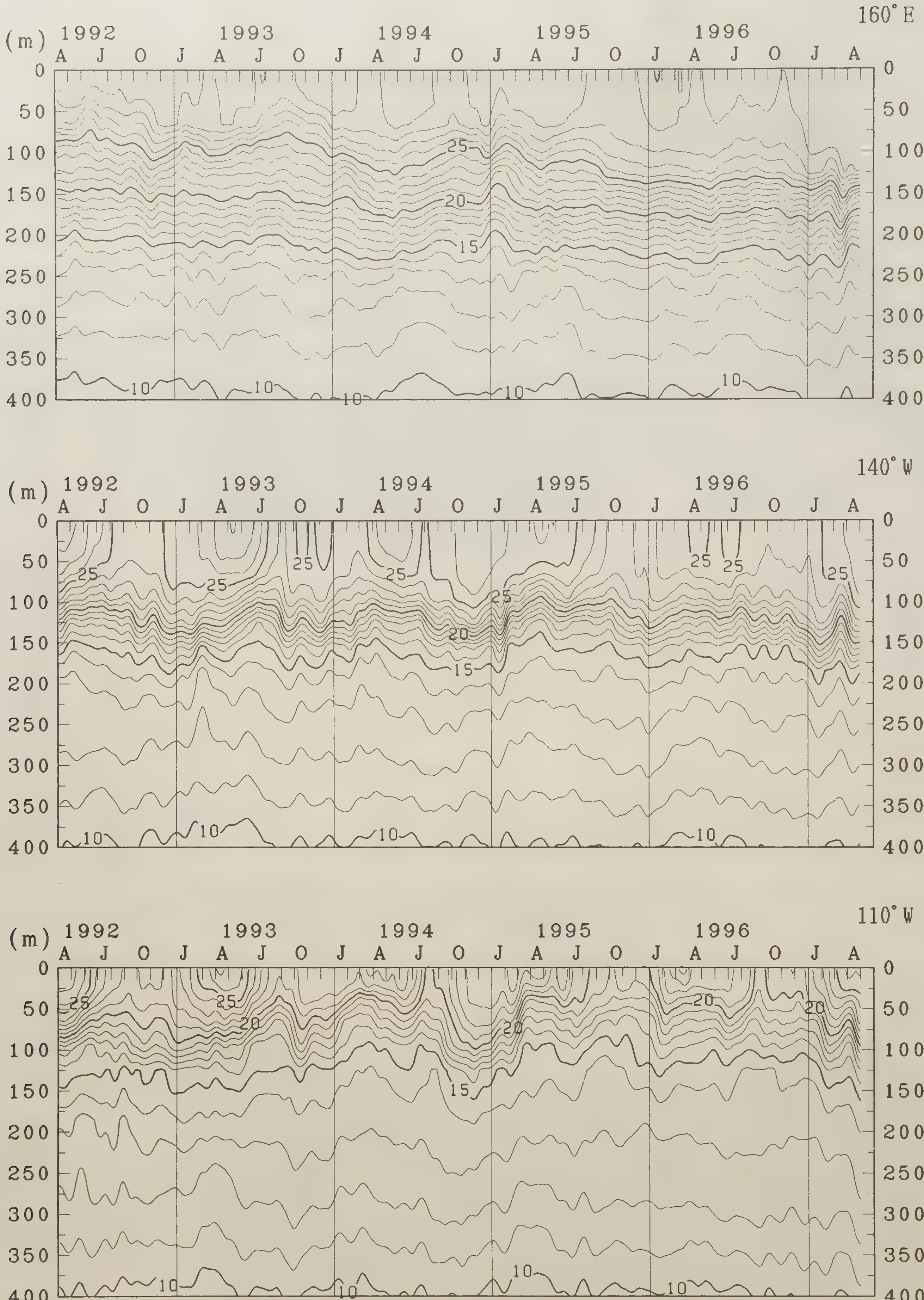
Fig.25 Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2 °N-2 °S) in the global ocean. Contour interval is 1 °C (left) and 0.5 °C (right). Values in the left panel greater than 28 °C are shaded and values less than 23 °C are spotted. Dashed contours in right panel indicate negative anomalies. Anomalies are computed from 1961-1990 base period means.

## Time-Longitude Sections of Ocean Heat Content & Anomalies (Eq.)




第26図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

Fig.26 Time-longitude sections of ocean heat content in the upper 260m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values in the left panel greater than 20°C are shaded and values less than 16°C are spotted. Dashed contours in right panel indicate negative anomalies. Anomalies are computed from 1987-1995 base period means.




第27図　太平洋赤道域の表層水温の時間－深度断面図

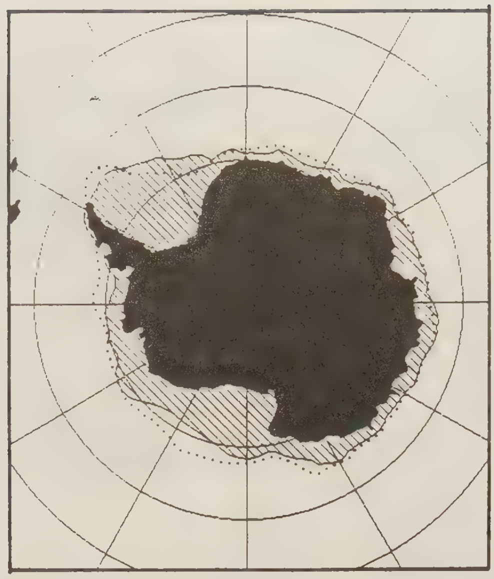
（上：西部、中：中部、下：東部）

Fig.27 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.



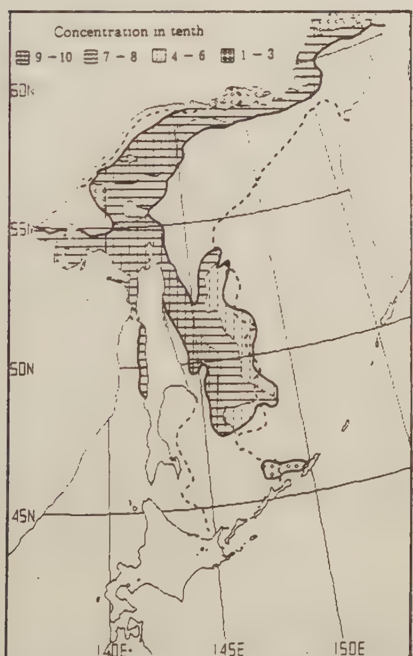
第28-1図　北極域の海氷図（1997年 4月18日）

Fig. 28-1　Sea ice chart in the Arctic on 18 APR. 1997.　The area hatched represents the sea ice extent.　The dotted line denotes the mean ice edge (averaged for the period from 1972 through 1990).　The data source is the U. S. National Ice Center (USA).



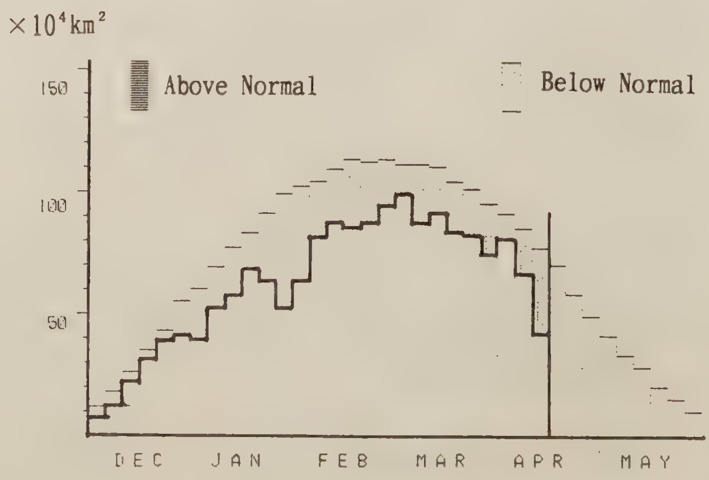
第28-2図　南極域の海氷図（1997年 4月18日）

Fig. 28-2　Sea ice chart in the Antarctic on 18 APR. 1997.　The area hatched represents the sea ice extent.　The dotted line denotes the mean ice edge (averaged for the period from 1972 through 1990).　The data source is the U. S. National Ice Center (USA).



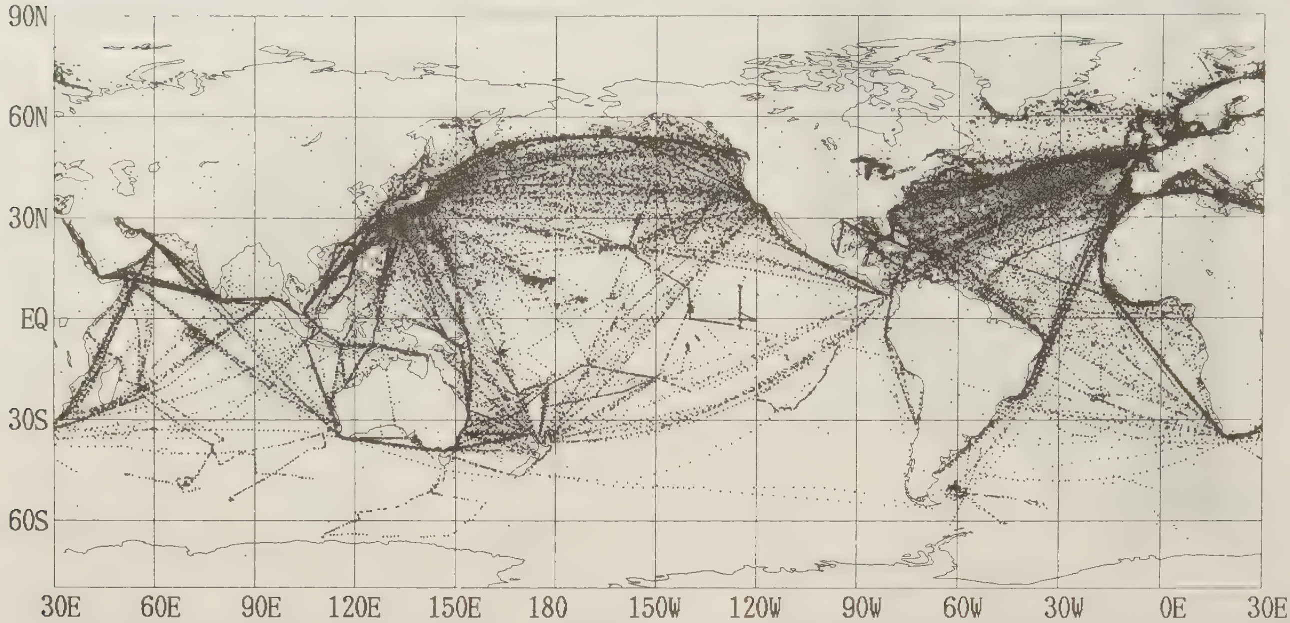

第28-3図　オホーツク海の海氷図（1997年 4月15日）

Fig. 28-3　Sea ice chart in the Sea of Okhotsk on 15 APR. 1997.　The dotted line denotes mean ice edge (averaged for the period from 1972 through 1990).

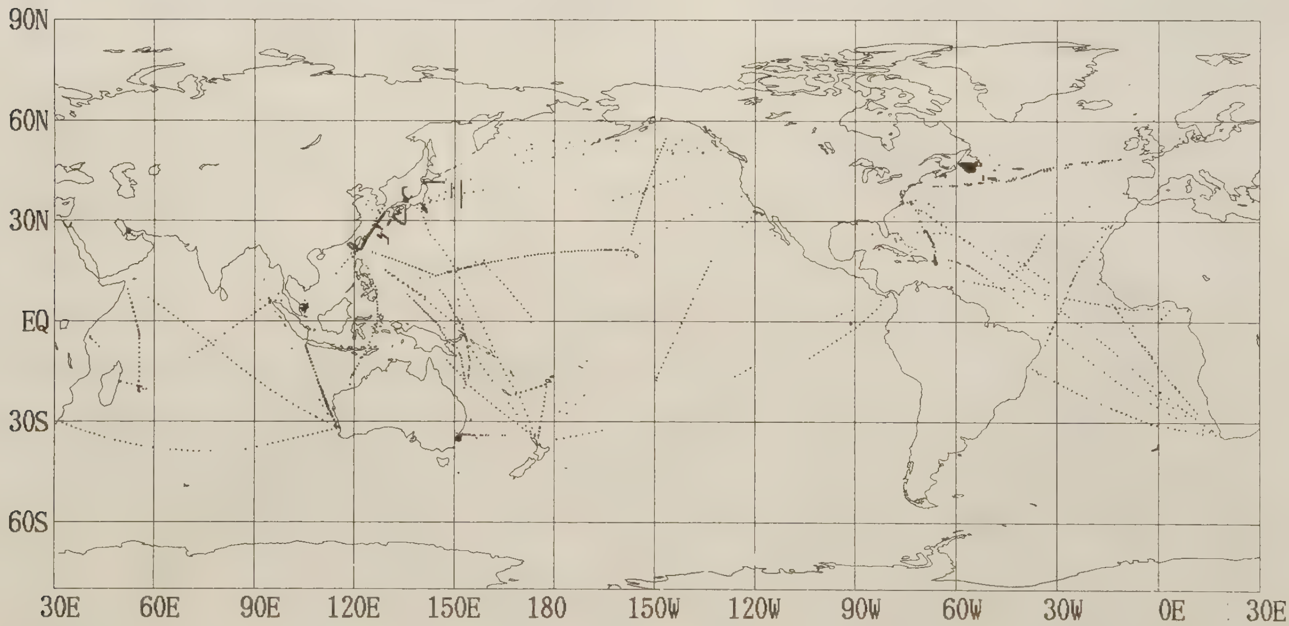



第28-4図　オホーツク海半旬海氷域面積（1996/97）

Fig. 28-4　Time-series of 5-day sea ice extent in the Sea of Okhotsk (1996/97).



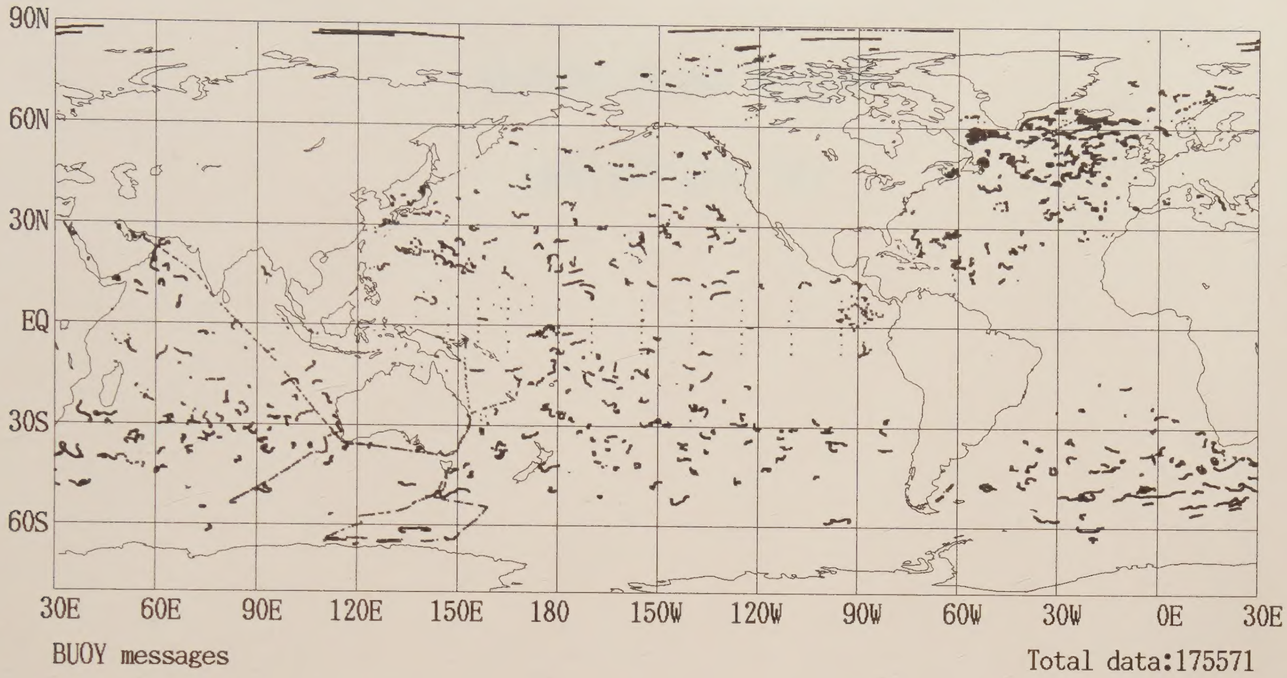

SHIP messages Total data:116157

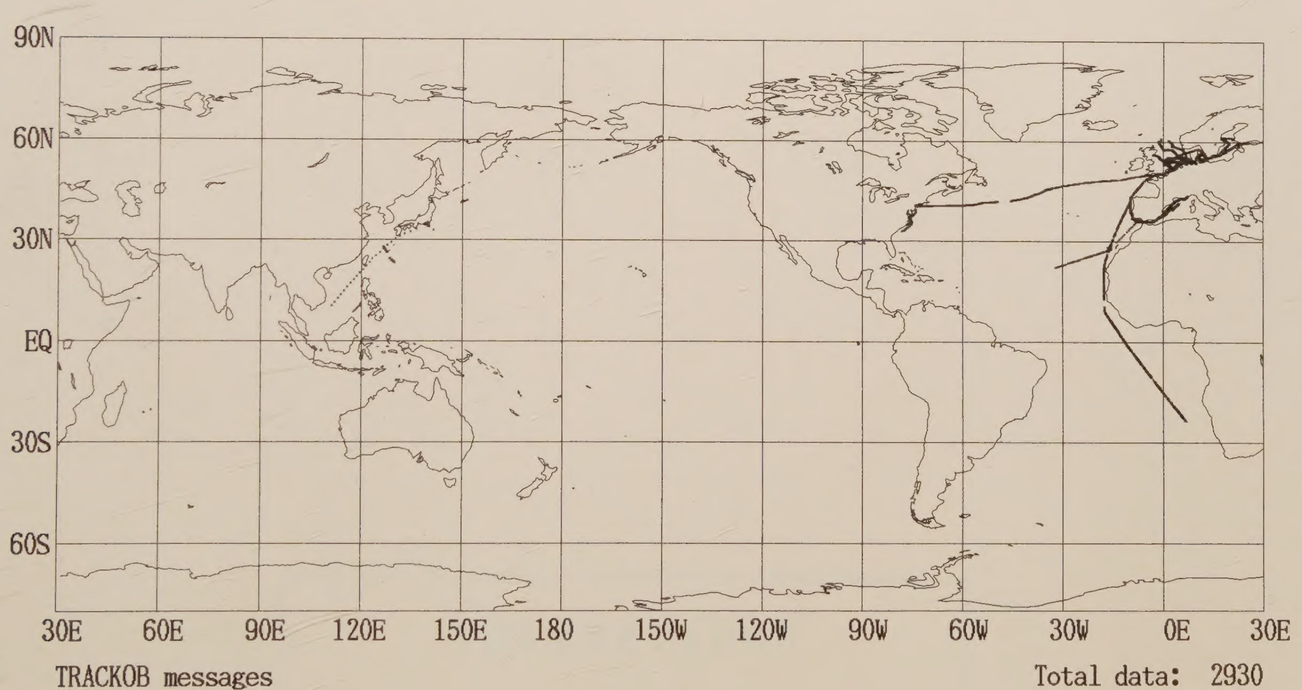



BATHY/TESAC messages Total data: 3010

第29-1図 測点分布図(1997年 4月)

Fig.29-1 Geographical distribution of SHIP messages (SST data, top) and BATHY/TESAC messages (subsurface temperature data, bottom) for APR 1997.




第29-2図　測点分布図(1997年 4月)

Fig.29-2 Geographical distribution of BUOY messages (buoy drift and SST data, top) and TRACKOB messages (ship drift and SST data, bottom) for APR 1997.

# 気 象 庁 海 洋 月 報

## Monthly Ocean Report

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